ELECTRICAL SOUTH

JUNE 1946

A MONTHLY JOURNAL FOR ELECTRIC POWER COMPANIES • ELECTRICAL CONTRACTORS • DEALERS & WHOLESALERS

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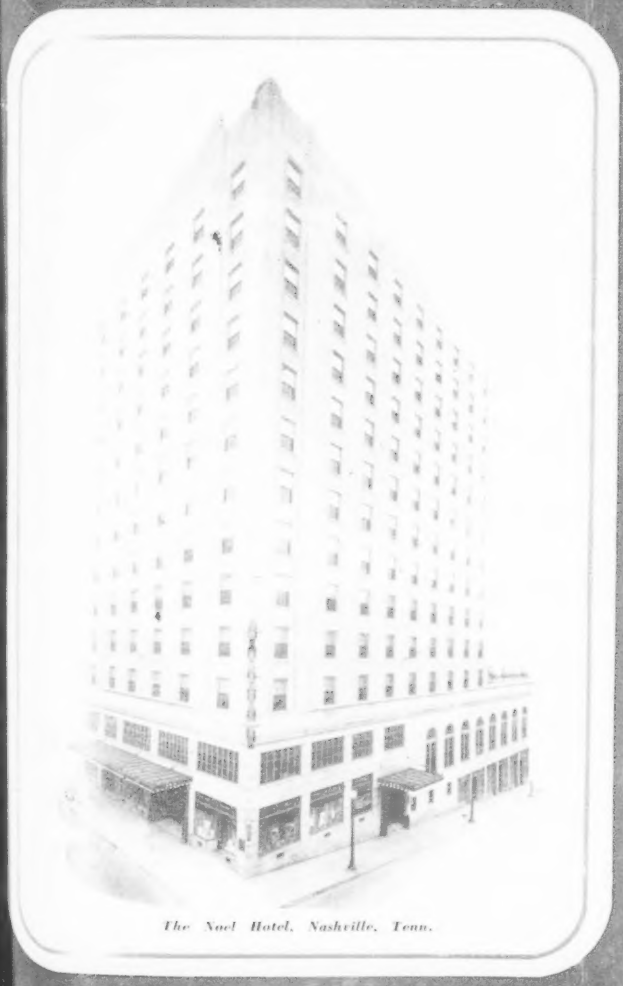
HUNTER FANS.



The Noel Hotel, Nashville, Tenn.

The Noel Hotel in Nashville has long been known for its careful management policy which has built a large following of state capitol visitors.

Now, to add more comfort, there are installed HUNTER ZEPHAIR cooling units on every floor to circulate fresh air through the guest rooms.

UNTER FAN & VENTILATING CO., IN

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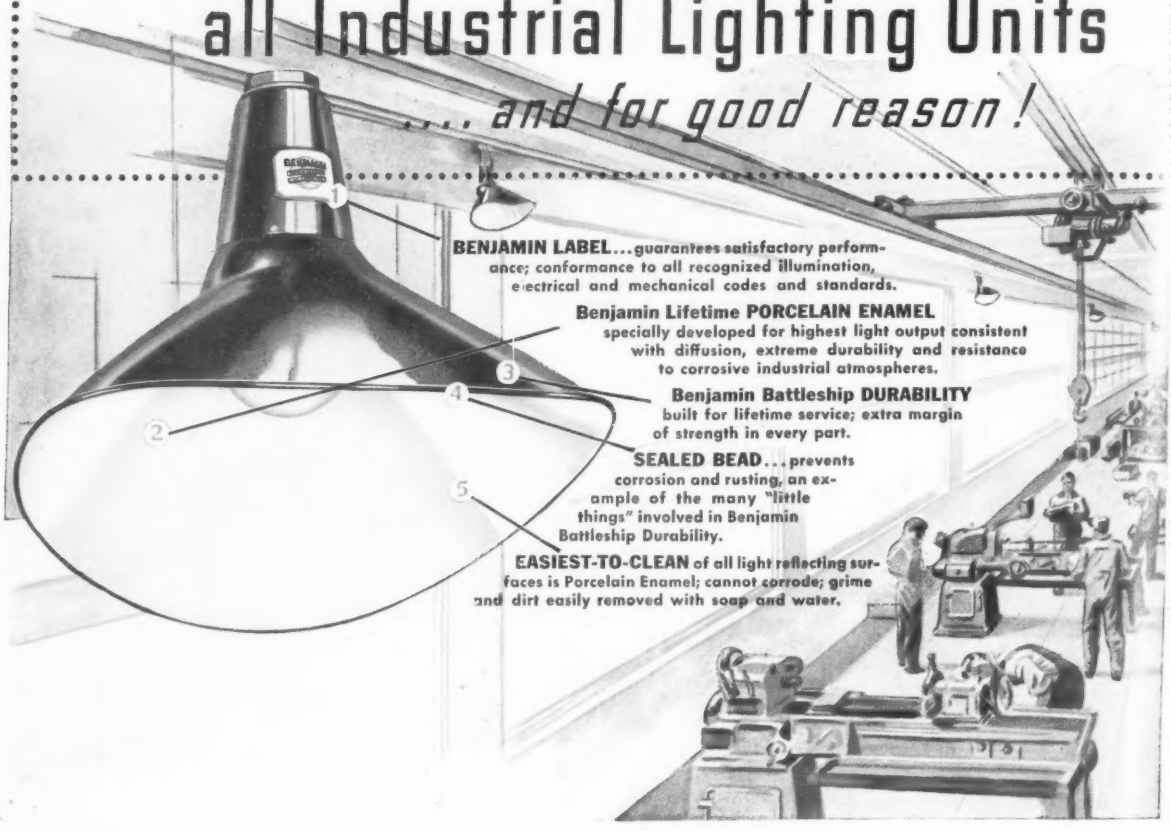
WESTERN SALES OFFICE: ST. LOUIS, 1706 OLIVE ST.

Offices: Atlanta, Chicago, Dallas, Houston, Los Angeles, Philadelphia, Boston, Cleveland, Detroit, Kansas City, New Orleans, Pittsbu

One of the Most Popular of all Industrial Lighting Units

. . . and for good reason!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BENJAMIN LABEL... guarantees satisfactory performance; conformance to all recognized illumination, electrical and mechanical codes and standards.
Benjamin Lifetime PORCELAIN ENAMEL specially developed for highest light output consistent with diffusion, extreme durability and resistance to corrosive industrial atmospheres.
Benjamin Battleship DURABILITY built for lifetime service; extra margin of strength in every part.
SEALED BEAD... prevents corrosion and rusting, an example of the many "little things" involved in Benjamin Battleship Durability.
EASIEST-TO-CLEAN of all light reflecting surfaces is Porcelain Enamel; cannot corrode; grime and dirt easily removed with soap and water.

Benjamin Elliptical Angle Reflectors

Your Best Solution to Many Lighting Problems!
A Lifetime of Economical, Efficient and Trouble-free Service!

Thousands of industrial plants have found in the Benjamin Elliptical Angle Unit a most satisfactory and economical solution to certain special lighting problems quite commonly found in Industry. For this unit is especially designed for the lighting of many locations where overhead obstructions make overhead illumination difficult or unsatisfactory . . . for the lighting of locations where high ceilings may require special units for adequate illumination of the vertical surfaces . . . and for the localized lighting of many vertical areas where fairly large areas are involved, etc.

For complete details on these units (available in a wide range of sizes from 75 watt to 750-1500 watt), write for free Data Bulletin.

BENJAMIN ELECTRIC MFG. CO., DEPT. Z-1 DES PLAINES, ILLINOIS

Specify **BENJAMIN** TRADE MARK *Elliptical Angle*

PORCELAIN ENAMEL LIGHTING UNITS
Distributed Exclusively through Electrical Wholesalers

1212

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Volume 26 Number 6

Rittenhouse 1946 DEALER Advertising Helps

The new 16-page edition is filled with just what every Rittenhouse dealer needs to make newspaper, direct-mail and other advertising dollars bring back greater results.

Department store ad men, large and small dealers—in town or city—will find this new Rittenhouse dealer help a tremendous time and energy saver as well as a carefully planned co-operative advertising offering of:

LAYOUT SUGGESTIONS

NEW AD ILLUSTRATIONS

SUGGESTED NEWSPAPER COPY

READY-TO-USE NEWSPAPER AD MATS

ELECTROS OF ALL MODELS

FLOOR AND WALL DISPLAYS

DIRECT-MAIL AND COUNTER LITERATURE

This new, up-to-the-minute Rittenhouse advertising stimulator has just come off the press and we anticipate a big call for it from dealers everywhere.

GET YOUR REQUEST IN TODAY'S MAIL—IT'S YOURS WITHOUT CHARGE

THE A. E. RITTENHOUSE COMPANY, INC.
ADVERTISING DIVISION
HONEOYE FALLS NEW YORK

MONARCH'S DEEP-HEET COOKER IS DIFFERENT

SIDE HEAT

Monarch builds the only cooker with SIDE application of heat. Side heat maintains uniform temperatures top to bottom. Cooking is faster — tenderizing is more thorough — food is baked, not stewed. It makes a real DIFFERENCE!

A 2½ lb. whole chicken, or 5 lbs. of jointed chicken, can be dry roasted to a tender, even brown.

If "weenies" and sauerkraut are on the menu, here is a clever way to cook it — a natural for "side-heet."

Yes, it even bakes an angel food cake — just the right size for one meal. And is it delicious!

ACTUALLY, Monarch's *"Deep-Heet"* Cooker is a small surface OVEN. It saves using the regular large oven for many baking operations. Women instantly grasp the advantage of side heat application — understand why it is more efficient than bottom heat. Thus it is easy for Monarch dealers to capitalize on this exclusive electric range feature. Standard equipment on Model F156PC.

MALLEABLE IRON RANGE CO.
4866 Lake Street Beaver Dam, Wis.

If it's a Side-Heat Cooker . . . it's a MONARCH!

RANGES AND HEATERS
Monarch-Paramount
COAL - WOOD, ELECTRIC, GAS and COMBINATION RANGES

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*

It's time to insist on SAFE wiring again

NOT so long ago, material shortages and other emergency demands forced practices on the electrical industry that did not meet code requirements. For example, people got temporary permission to use open wiring, and other less-than-safe systems.

Now that the emergency is past, common sense dictates a return to safe practice. Temporary wiring should be replaced. In new construction, only the best methods should be followed--and in electrical construction "best" means "safest."

REMEMBER that the only wiring system approved by the National Electrical Code as moisture, vapor, dust and explosion proof in hazardous locations is a standard-threaded rigid conduit.

Youngstown's "Buckeye" is the most widely used full-weight, rigid-steel conduit in the world. It is stocked and sold by leading electrical distributors in every industrial market. Specify "Buckeye" and be safe.

BUCKEYE YOUNGSTOWN CONDUIT

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Ask your distributor for:
Youngstown Buckeye Conduit...Pipe and Tubular Products...Sheets...Plates...Electrolytic Tin Plate...Coke Tin Plate...Bars...Rods...Wire...Tie Plates and Spikes.

Advertisers and Agencies Know—

The South Subscribes to The Progressive Farmer

Advertisers and Advertising Agencies made 1945 a banner year for The Progressive Farmer. More money was invested in advertising in The Progressive Farmer than in any Southern farm magazine in any previous year in history.

The Progressive Farmer has won overwhelming recognition as the South's greatest sales influence. In 1945, its leadership over the second Southern farm magazine was—

46% in total commercial linage;

53% in advertising revenue;

140% in exclusive Southwide linage.

And, for the first five months of 1946, The Progressive Farmer's leadership over the second Southern farm magazine is greater than it was in 1945... in total commercial linage... in advertising revenue... in exclusive Southwide linage... and in 4-color linage.

Such a record means that advertisers and advertising agencies know **The South Subscribes to The Progressive Farmer.**

Advertising Offices: **BIRMINGHAM, RALEIGH, MEMPHIS, DALLAS, NEW YORK, CHICAGO**

Pacific Coast Representative: Edward S. Townsend Co., San Francisco, Los Angeles

Better Construction Today—
Less Maintenance Tomorrow

KEARNEY PROTECTED THREAD CON-NEC-TAP CLAMP

Grease filled chamber houses screw—prevents corroding. Line connection stays tight —spring washer maintains constant pressure. Vibration or expansion and contraction won't loosen their grip.

KEARNEY TRIP-O-LINK FUSE CUTOUT

For practical and dependable low cost protection. Single unit link and cartridge construction provides new arc-extinguishing cartridge with each fuse replacement. Also available in two-shot and three-shot reclosing types.

KEARNEY HI-LINE DISCONNECT STICK

Light, yet stands much abuse. Ferrule type metal head. Kearney takes special care in selecting and treating laminated poles for Hi-Line tools used on hot line work.

KEARNEY CON-NEC-TITE

Reduce costs with these permanent, positive, solderless connectors. Fast and easy to use.

KEARNEY PRODUCTS

JAMES R. KEARNEY CORPORATION OVERHEAD & UNDERGROUND UTILITY EQUIPMENT

4224-42 CLAYTON AVE., SAINT LOUIS 10, MO.—*Canadian Plant,* LEASIDE, ONTARIO

"UNMATCHABLE"

Eleven years of continuous service to this leading southern distributor with satisfaction on both sides

"Your new financing plan is by far the most attractive we have been privileged to operate under. We commend it to all dealers handling retail paper.

"It has certainly been a pleasure, and very profitable to us to have had Commercial Credit Corporation as our commercial bankers for the past eleven years. We have at all times found your personnel courteous and willing. We sincerely appreciate your fine banking service and UNMATCHABLE co-operation."

COMMERCIAL CREDIT PLAN

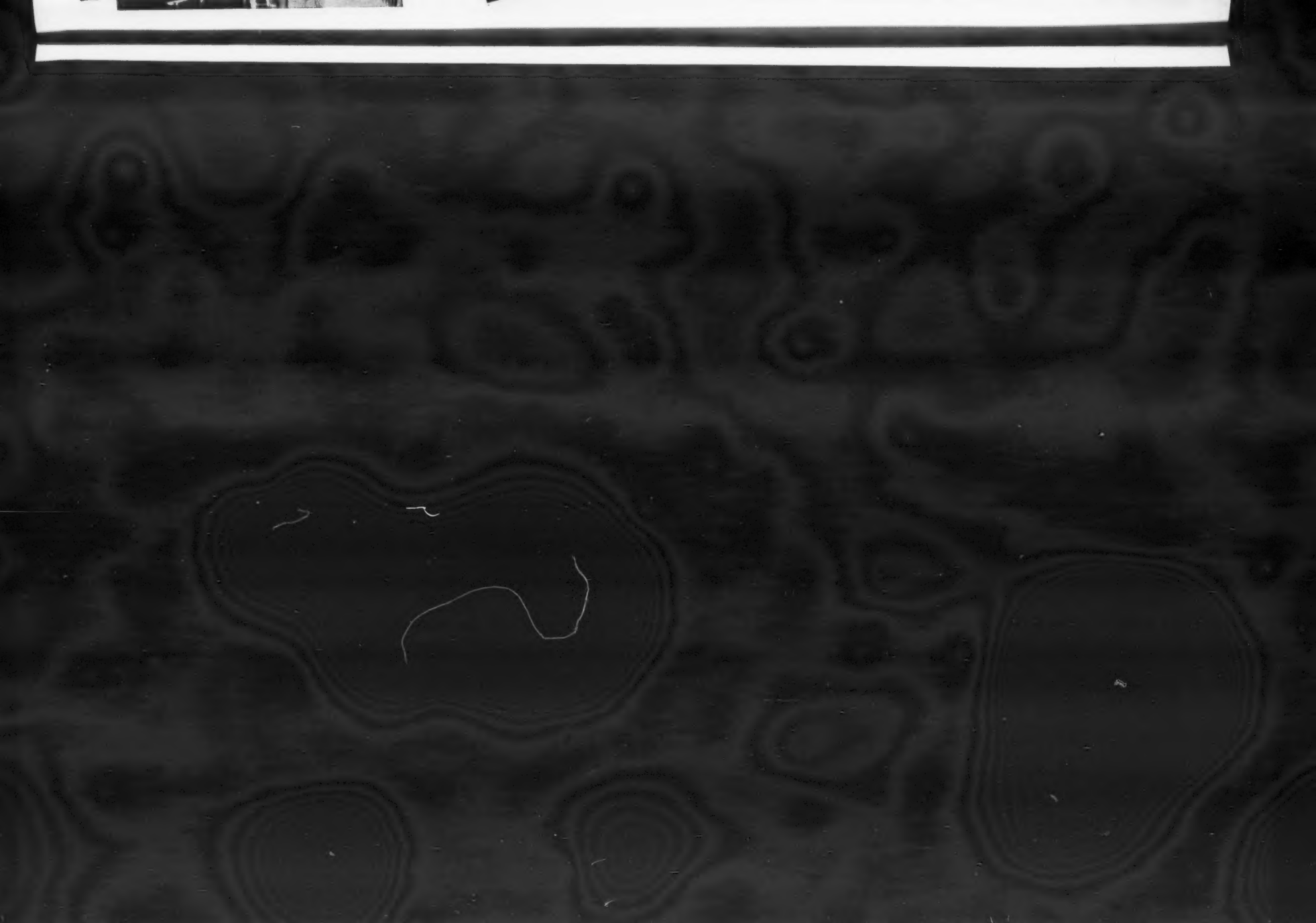
Otto S. Passman

Passman Equipment Company
Monroe, Louisiana
Commercial & Domestic Refrigerators and Household Appliances

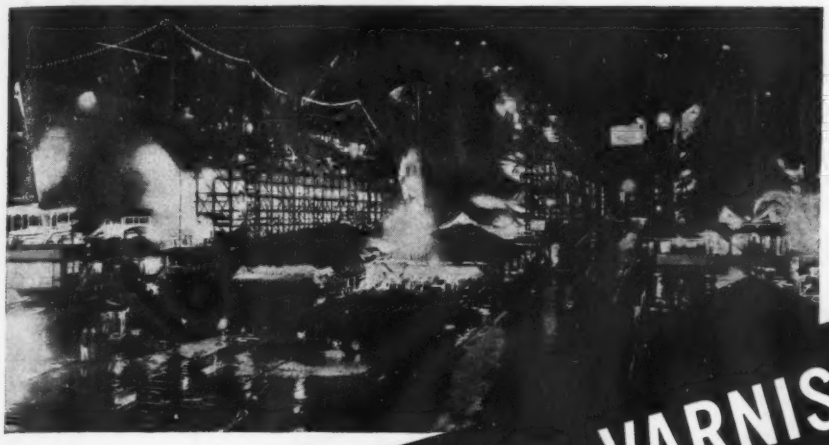
COMMERCIAL CREDIT COMPANY

BALTIMORE 2, MARYLAND

Capital and Surplus more than $80,000,000



No electrical equipment can be any better than its insulation



This insulating varnish helped shipyard electrical equipment operate under wartime overload.

G-E INSULATING VARNISH 9435

A black baking varnish . . . highly flexible . . . good resistance to moisture and chemicals . . . recommended for manufacture and maintenance of machine tool motors

. . . and the same varnish can help to keep peacetime industry's electrical equipment on the job.

IN the field of insulating varnishes the General Electric label stands for 45 years of experience in research and manufacture . . . large productive capacity . . . expert technical service. G-E Insulating Varnishes, which were supplied in millions of gallons for the toughest war uses, now are available to all industry. You can count on uniformity of product in every shipment because of strict G-E Quality Control in every manufacturing operation. For full details consult your local General Electric Merchandise Distributor. Or write direct to Section RIMA-664, , Resins and Insulation Materials Division, Chemical Department, General Electric Company, Schenectady 5, New York.

GENERAL ELECTRIC

CD46-14

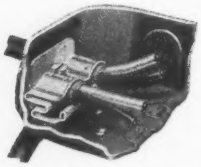
G. E. OFFERS A COMPLETE LINE OF INSULATING MATERIALS

Say, Sonnyboy, WHERE KIN I FIND dis RACO?

• Raco is the famous name of All-Steel-Equip's quality line of steel switch boxes and outlet boxes. It's the dependable line, the uniform line, the line that's *sold nationally through wholesalers only*. Builders, Contractors and Architects the country over prefer Raco products. Here's why:

- Every product is a *precision product*—no jagged or rough edges, no dirt or grease. Smooth, attractive finish!
- Raco boxes come neatly packed in protective carton... with index showing number, quantity and finish. Easy to stock, inventory, and identify.
- All-Steel has been making quality metal products for over 33 years. The Raco line is made with the same care—to the same exacting standards!

Let us tell you more about Raco products . . . write today



DO-21-N-3 3½" dia.
DO-16-N-3 4" dia.

Use Raco clamp type boxes to solve many of your connector worries.

DO-21-N-3, 3½" dia. is widely used with non-metallic cable.

DO-30-N, 3½" dia. is the perfect box for use with "BX."

ALL-STEEL-EQUIP COMPANY, INC.
800 Kensington Avenue, Aurora, Illinois

DO-30-N 3½" dia.
DO-31-N 4" dia.

RACO • ALL-STEEL • PRODUCTS
SWITCH BOXES • OUTLET BOXES

Frigidaire's new Home Freezers were born nearly a quarter-century ago!

There's nothing new about building Home Freezers at Frigidaire. For, 'way back in 1923, Frigidaire first produced a mechanically refrigerated, low-temperature cabinet for storing ice cream. This was the beginning. Since then, Frigidaire has had almost a quarter-century of "know how" in the building of more than *ONE-THIRD MILLION mechanically refrigerated, low-temperature cabinets of all kinds!*

And it was in 1929 that Frigidaire first marketed a low-temperature cabinet designed *specifically* for storing frozen food.

Today's new Frigidaire Home Freezer is the result of those early experiences and the accumulation of the specialized knowledge of low-temperature refrigeration which is needed to build a really *good* Home Freezer. It's the Home Freezer that dealers can sell with full confidence, *knowing* it will do a dependable job with a minimum of service.

In preparation for the marketing of Frigidaire Home Freezers, thousands of actual food tests were made . . . new and better food freezing techniques were developed . . . over a million booklets on the freezing and storing of food were distributed . . . full-color films were shown to thousands of housewives . . . all with the idea of establishing the Frigidaire Dealer as Home Freezer Headquarters in his community.

Thus, the advent of the new Frigidaire Home Freezer is one more example of Frigidaire's thoroughness in doing things. Another proof of Frigidaire's leadership. Another instance where the Frigidaire Dealer and his customers can . . . Depend on Frigidaire To Do Things Right!

Depend on FRIGIDAIRE to do things RIGHT!

First New 4-Ft. Frigidaire Home Freezer comes off the production line as E. R. Godfrey, General Mgr., and P. M. Bratten, General Sales Mgr., get a demonstration from S. M. Schweller, Chief Engineer, on its many features, including the counter-balanced lid which opens at a finger-touch.

New 8-Ft. Frigidaire Home Freezer receives unanimous approval of J. L. Gibson, Mgr. Commercial and Air Condition Engineering, H. M. Kelley, Appliance Sales Mgr., and D. C. McCoy, home freezer authority. They're shown here examining its points of superiority.

1923. Frigidaire Ice Cream Freezers. Note the dome-type, water-cooled compressor. Compare it with today's famous Meter-Miser mechanism.

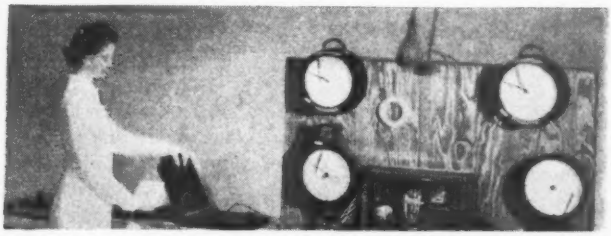
1929. Frigidaire first marketed a low-temperature cabinet designed specifically for frozen food.

1929. Frigidaire first produced a frozen food display case for the storage and display of commercially frozen food.

1934. Locker plants equipped by Frigidaire were among the first to freeze and store home-prepared foods.

1939. Frigidaire first produced a Frosted Food Merchandiser which gained national acceptance in food stores.

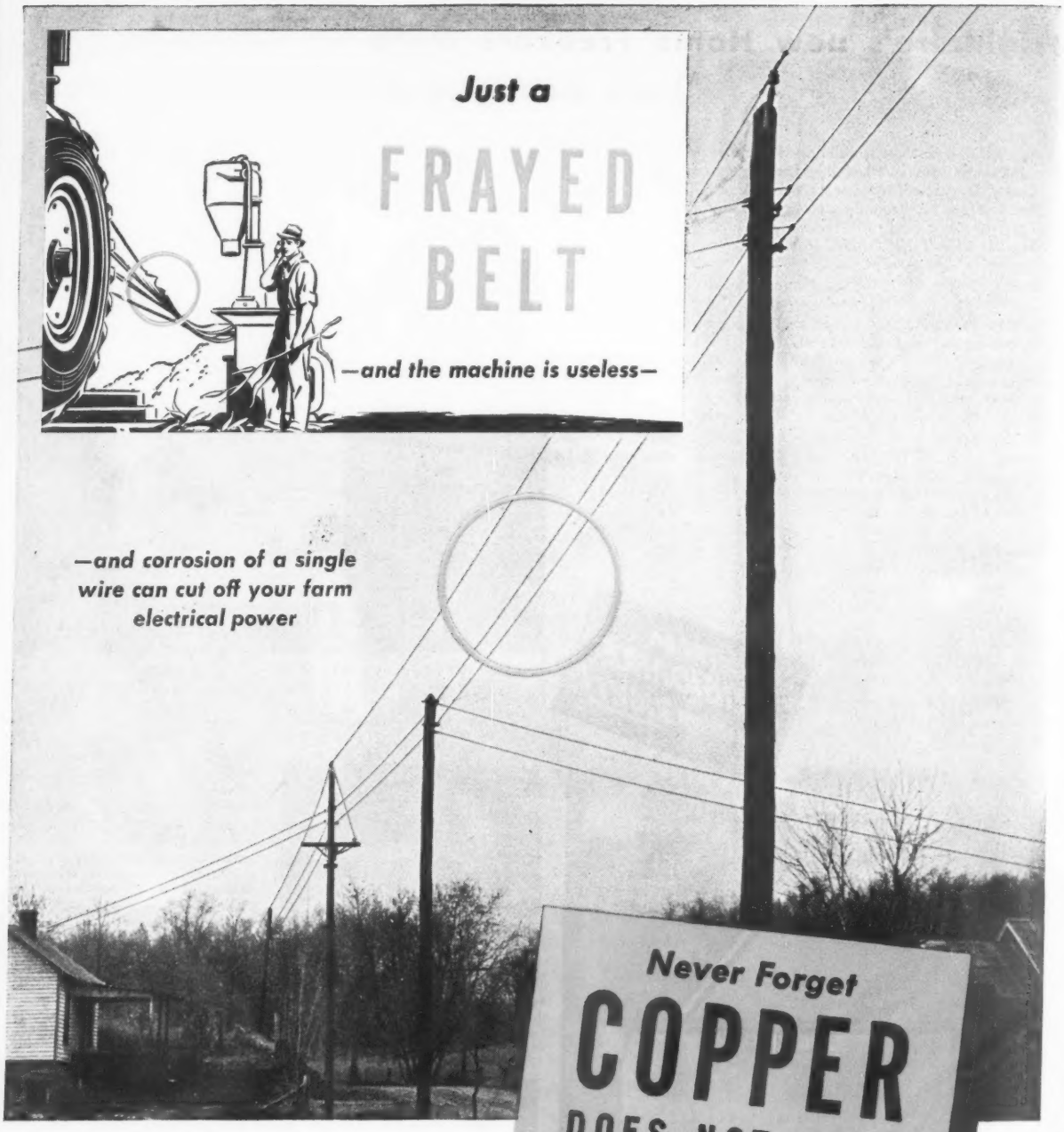
For Nearly a Quarter-Century Frigidaire low-temperature cabinets have been used successfully as home freezers. Today's new Frigidaire Home Freezers reflect this long experience, and offer the consumer better, more dependable, more economical home freezing.



Frozen Food Research is a continuing activity at Frigidaire, with a specially trained staff of engineers, technicians, and home economists who seek new and better ways to wrap, prepare, freeze, and store foods of all kinds. Many of today's accepted frozen food methods have resulted from this research.

You're twice as sure with two great names—

Frigidaire made only by General Motors



ELECTRIC POWER is the last thing you can afford to be without. Don't take chances; see that power lines are made of copper. Thousands of miles of wire and cable in active rural service constantly demonstrate the efficiency and long range economy of Anaconda copper products.

From mine to user, these products have the benefit of Anaconda research, engineering and manufacturing experience—standards rigidly set to meet the most severe operating conditions. Anaconda Wire & Cable Company, Sudsidiary of Anaconda Copper Mining Company, 25 Broadway, New York 4, N. Y. Sales Offices in Principal Cities. 46305

3 Conductors for Rural Distribution:
Bare Copper Wire and Cable
Copperweld and Copper-Copperweld
Weatherproof Wire and Cable

ANACONDA

LOOK TO *Anaconda* FOR WEATHERPROOF THAT LASTS

ELECTRICAL SOUTH

JUNE, 1946

VOL. 26 NO. 6

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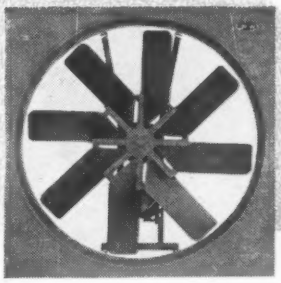
EXTRA VALUE means Easier Sales for you . . .

Plan AHEAD with Coolair TRADE MARK Attic Fans



COOLAIR DEALERS know they are offering their customers far greater value in the efficient design and the high-quality construction of Coolair fans!

COOLAIR DEALERS know that when our production can approach the demand, they will be rewarded with volume sales even though competition is tough, because of the many exclusive patented features of Coolair Attic Fans. And they know that the longer life built into every Coolair fan means trouble-free performance and satisfied customers for years to come!

Would YOU like to know more about the real opportunities and the long range possibilities of Coolair Attic Fans? Start planning ahead NOW by contacting your Coolair distributor, or write us direct.

A full description of the Coolair line, with tables showing models, dimensions, performance data, etc., can be found in SWEET'S CATALOG A.S.H.V.E. GUIDE ELECTRICAL BUYER'S REFERENCE

AMERICAN COOLAIR CORPORATION . . . Manufacturers

3604 MAYFLOWER STREET

JACKSONVILLE 3, FLORIDA

Between the Seasons

Have your Electrical Contractor order now for summer installations. Write today for Bulletin No. 73.

Spring and Fall have many chilly days and evenings, too, that need just a little *Extra Heat.* That's when the FA Electric QUIKHETER proves its worth in delightful warmth . . . filling an average room in just a few minutes.

In 3 capacities, 1500, 2000, 3000 *watts; 115 and* 230 *volts.*

Best of all, the FA QUIKHETER has no moving parts to wear out, and a genuine Nichrome element that should *never* burn out under normal operating conditions. Built into the wall it takes no floor space and eliminates the hazards of exposed cords.

It costs no more than many portable models, yet lasts a lifetime. Separate control switch* locates high on the wall, away from children's inquisitive fingers, where you can reach it without stooping.

The FA QUIKHETER is an *auxiliary* electric heater providing *extra* warmth for the morning shower, baby's bath, drying hair, and chilly mornings before the regular heating system is started.

*Not furnished.

BUILT-IN ELECTRIC

FA QUIKHETER

Frank Adam Electric Co.

BOX 357
ST. LOUIS
MISSOURI

Power Possibilities of Atomic Energy

One of the most distinguished authorities in the field of nuclear energy discusses the possibilities of atomic energy for the production of controlled and usable power.

THE ATTENTION of the public in the problems of atomic energy has been centered so far primarily on the military side of the development. It is natural that it should be so, since on one hand the military use is to the present time the only application that has attained practical results. On the other hand, the issues raised by it for the national and international policies are novel and difficult and call for quick solution. There are, however, a number of possibilities for the peace time use of atomic energy which in the long run may prove more important than the bomb.

If we try to look into the future, and we take the optimistic point of view that mankind may succeed to organize itself so as to eliminate the fear and danger of the destruction potentialities of atomic weapons, one might speculate as to what may happen to atomic energy as a constructive new force.

Any such speculation, of course, can be at the present time only very sketchy. One might point out some probable developments, but it would be impossible to make the list even approximately complete. An attempt to do this would be now as difficult as it would have been one century ago to guess the development of electricity.

Production of Power

The first point that I propose to discuss is the use of nuclear reactions for the production of controlled and usable power. Chain reacting "piles", in which energy is produced at an easily controllable rate, have been operated for over three years. Starting with the first pile, which was run only up to 200 watts, the power has been stepped-up in successive units by enormous factors. The piles operated at Hanford for the synthesis of plutonium produce energy in amounts comparable to that of the largest hydro-electric plants. The energy that is produced in the piles built until now, however, is delivered at such a low temperature that it is of no practical use. In Hanford plants it actually is wasted for the extremely unconstructive purpose of heating, by small amount, the water of the Columbia River.

The physical basis of the chain reaction is the fission of uranium. This is a violent disintegration of the uranium nucleus that takes place when a neutron strikes it. The original nucleus separates into two approximately equal fragments, which fly apart with an enormous velocity and a relatively extremely large release of energy. What makes the chain reaction possible, however, is not the fact that a large amount of energy is released but the fact that in the process also neutrons are emitted besides the two fragments. If we assume, for the purpose of this discussion, that two neutrons are emitted in each fission and we assume further that the conditions are such that practically all the neutrons originating in the system end up by giving rise to fission, we have the conditions that would lead to an explosion chain reaction. If, indeed, we introduce in a system of this type one initial neutron, this will give rise to a fission in which two neutrons will be produced. In their turn they will give rise to a second fission and produce two neutrons each and so on. The number of neutrons will then double at each step or "generation" so that their number will rapidly mul-

Dr. Enrico Fermi, Professor of Physics, University of Chicago, presented this address at the George Westinghouse Centennial Forum, in Pittsburgh, Pa., on May 16, as part of a Symposium on "The Future of Atomic Power." Following are some of the highlights of Dr. Fermi's distinguished career: Voluntary exile from his native Italy (where he served as professor of theoretical physics at University of Rome), because of his hatred for Fascism. Winner of Nobel Prize in 1938 for work on bombardment of the atom. Authority on energy production in stars. Showed spray of stellar energy on the earth is caused by transformation of hydrogen atoms into helium, thus releasing 20,000,000 degrees (Centrigrade) of heat per gram of hydrogen. Under his direction, science of physics was systematized throughout Italy. Professor of Physics at Columbia University, 1939-45; now Charles H. Swift Distinguished Service Professor of University of Chicago, Department of Physics and Institute of Nuclear Studies.

tiply until the reaction reaches extreme violence and great amounts of heat are developed. This sudden release of energy produces the atomic explosion. The system as just discussed is said to have a "reproduction factor" of 2 because at each generation one neutron gives rise to 2 new neutrons.

Glossary of Important Terms in Nuclear Physics

Atom—Smallest unit of matter remaining unchanged in chemical reactions. All atoms are about 10^{-8} cm in diameter. They consist of a central positively charged *nucleus*, about 10^{-12} cm in diameter, surrounded by enough electrons to make the atom electrically neutral.

Neutron—A basic constituent particle of atomic nuclei having no electric charge and having a mass of about 1.67×10^{-24} gram.

Proton—A basic constituent particle of atomic nuclei having a positive charge numerically equal to that of the negatively charged electron, 1.60×10^{-19} coulomb and a mass about the same as that of the neutron. The proton itself is the nucleus of ordinary hydrogen atoms.

Electron—Smallest atomic particle. Unit of negative electricity.

Deuteron—This is the nucleus of heavy hydrogen atoms which occur in nature as about 1/5000 of ordinary hydrogen. It is the simplest composite nucleus known, consisting of a combination of one proton and one neutron.

Alpha-particle—This is the nucleus of helium atoms and is a composite nucleus of two protons and two neutrons. The name originally referred to the alpha radiation from naturally radioactive substances like uranium and radium, later recognized to be fast-moving nuclei of ordinary helium gas.

Atomic number—An integer characteristic of each chemical element which tells how many protons there are in the atomic nucleus and also how many electrons there are in the atom, outside the nucleus. Usually denoted by Z. Examples: hydrogen, Z=1; helium, Z=2; neon, Z=10; uranium, Z=92.

Isotope—A particular variety of atom or nucleus characterized by a particular atomic weight as well as a particular atomic number. Example: all uranium atoms have a charge Z=92, those of the light isotope have an atomic weight of about 235 while those of the heavy isotope have an atomic weight of about 238. There is also a very rare isotope having an atomic weight of 234.

Neptunium—A new chemical element not known to occur in nature having Z=93 and an atomic weight of 239. This is formed by radioactive decay of U^{239} which emits a β-particle (high energy electron) to become Np^{239}.

Plutonium—A new chemical element not known to occur in nature, having Z=94 and an atomic weight of 239, formed by radioactive emission of a β-particle from Np^{239}.

Moderator—A substance (carbon, heavy water, or beryllium) used as a means of slowing down neutrons by means of elastic impacts of the neutrons with the atoms of the moderator.

Heavy water—A kind of water whose molecules consist of the heavy hydrogen isotope, deuterium, in combination with oxygen, written D_2O instead of H_2O.

Chain reaction—Any reaction, chemical or nuclear, in which the process continues by virtue of the action of one of the products to cause the reaction to continue. Example: uranium fission is caused by a neutron and the fission process releases more neutrons which can cause more fissions.

Pile—Any arrangement involving lumps of fissionable matter, e.g., uranium, together with moderator, so arranged as to utilize the neutrons well enough to result in a chain reaction.

Neutron Reactions

In designing a bomb one tries to achieve conditions in which the fission energy is released as fast as possible. This requires that the "generation" time be as short as possible and that at each generation the number of neutrons should increase by the largest possible factor. In short to make the generation time short one will use fast neutrons and in order to make the reproduction factor as large as possible one will try to adjust things in such a way that a large percentage of the neutrons end up by producing new fissions and thereby the largest possible number of new neutrons.

If we want, instead, to produce a controllable chain reaction, the reproduction factor will have to be very close to 1 and there will be no need to have a short generation time. Indeed it would be, if anything, more desirable that the generation time be rather long because this would make control more easy. It is possible therefore to use slow neutrons in a controlled chain reaction. There is one more fundamental difference between the bomb and a controlled chain reaction. The fast reaction on which the bomb is working is operated using "valuable" fissionable material like U^{235} which is separated from uranium at Oak Ridge, Tennessee, or plutonium which is a new element which is actually fabricated at Hanford, Washington.

Controllable chain reactions can be instead obtained using natural uranium. Indeed this material was used in producing the first chain reaction for the simple reason that at that time the "valuable" fissionable materials were not available. It also is used in all the industrial piles that have been constructed so far. Natural Uranium consists primarily of a mixture of U^{238} representing about 99.3 percent of the total and U^{235} representing about .7 percent. It is well known that it is this small amount of U^{235} that makes the reaction possible since U^{238} does not react giving rise to fission when bombarded by slow neutrons. Actually, a chain reaction can be obtained quite easily using U^{235} since thereby one avoids the parasitic absorption due to the U^{238}. When ordinary unseparated uranium is used the problem is appreciably more difficult since the positive excess in the neutron balance in each generation is in this case very small and all unavoidable losses must be kept to a minimum so as to end up with a reproduction

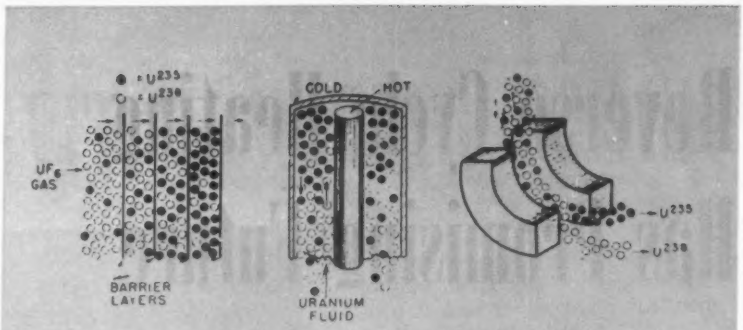
factor larger than unity. From this point of view, therefore, the presence of U^{238} is very undesirable. On the other hand U^{238} plays a very essential role in the plutonium production. Indeed U^{238} is transformed during the reaction into plutonium by the mechanism represented in the following nuclear process:

$$U^{238} + n - - - U^{239}$$

$$U^{239} - - - Np^{239} + e^-$$

$$Np^{239} - - - Pu^{239} + e^-$$

The first of these reactions represents the absorption of a neutron by the nucleus 238 which is thereby transformed into the isotope U^{239}. U^{239} is an unstable isotope of uranium which spontaneously disintegrates by omitting an electron and transforming into the new element neptunium of atomic charge 93 and weight 239 as indicated in the second reaction. The transformation of uranium into neptunium takes place in a time of the order of one half hour. Also Np^{239} which is thereby formed is unstable and spontaneously emits an electron changing in a few days into the final reaction product Pu^{239} as indicated by the last operation. If we examine the overall balance of a chain reaction of this type, it is clear therefore that U^{235} will gradually be destroyed to keep the reaction going; whereas U^{238} will slowly be transformed into Pu^{239}.

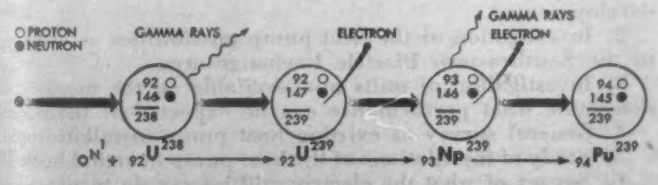


The small proportion of U^{235} can be separated from the predominating U^{238} in several ways, none of them easy. Three have been used on a large scale, and a fourth (mechanical centrifuge) successfully passed pilot-plant tests. In the multi-step barrier-layer method (left) the light masses pass through a little more readily than the heavy ones. In the thermal diffusion method (center) the lighter atoms tend to separate from the heavy ones under thermal action. By the mass-spectrometer method, the atoms are charged and passed through a magnetic field causing them to take separate paths.

Control of a Pile

In order to operate a chain reacting pile at a steady level the reproduction factor must be equal to one. If it is larger than one the intensity increases, if it is smaller the intensity drops. For this reason the operator must have means to adjust the reproduction factor to any desired value in the vicinity of one. This usually is achieved by means of organs called control rods. They are rods made of some material having a strong absorption for neutrons which the operator can insert into the pile at a depth that can be accurately adjusted. The number of neutrons absorbed by the rods and thereby removed from the reaction will depend on how deeply the rod reaches into the pile. Consequently, the reproduction factor will also depend upon the position of the rod and will have its largest value when the rod is outside and its smallest values when the rod is completely inside. Conditions are usually adjusted in such a way that the reproduction factor is equal to 1 when the rod is in some intermediate position called "critical position" and it takes values larger than 1 if the rod is pulled further out than the critical position and smaller than 1 if the rod is pushed further in. If the operator wishes to increase the rate of reaction, the rod is pulled out so that the reproduction factor exceeds 1 by some small amount and the number of neutrons gradually increases. If the operator wants to reduce the rate of reaction, all he has to do is to insert the rods somewhat further than the critical position. The reproduction factor will then be less than 1 and the rate of reaction will gradually decrease. If he wants to keep the power at a steady level, he will place the rods at the critical position.

It is clear from this that the problem of controlling the rate of reaction in the pile can be solved in a very simple way. Experiment actually has shown that the controlling problem can be solved very easily also in practice. Indeed, to keep a pile, whether capable of producing a large or small amount of power, running at a steady level is an art that can be completely mastered in a few hours. It is also easily possible to keep the intensity of the pile steady at any desired level by moving the rods with mechanical devices operated automatically. In this case all the operator has to do is watch the control panel.



Here a nucleus of uranium-238 captures a neutron to emit gamma rays and form a radioactive isotope, uranium-239. This atom then emits a high-speed electron to form neptunium-239, which in turn emits gamma rays and an electron to give plutonium-239. Plutonium is considered a stable element, although in time it releases an alpha particle and becomes uranium-235.

High Temperature Piles

The chief technical difficulty which stands at present in the way of production of atomic energy for practical uses is the following. In all the react-

(Continued on page 75)

Reverse Cycle Heating Has Promising Future

By Dr. E. N. Kemler*

THE MOST TALKED of subject today among those in the electric utilities who are interested in new outlets for electric power, and among the heating and ventilating engineers is the heat pump. The idea of a heat pump for building heating is not at all new. Lord Kelvin in 1852 proposed in a paper before the Royal Society to use a so-called warming engine for the heating of buildings. Thermodynamically his idea was entirely feasible. At that time, however, the type of equipment necessary to perform the mechanical functions efficiently was not available. As a result, nothing could have been built at that time, even had there appeared to be a definite demand. Of equal importance was the fact that the public at that time did not have the same heating requirements or standards which we have today.

The average home of today requires a heating temperature considerably above that which was considered satisfactory heating a few decades ago. Social standards would, therefore, also have proved to be a barrier at that time even if the mechanical equipment had been available.

While the idea of the heat pump has been frequently revived since that time both the mechanical equipment available and our home heating and cooling requirements were not developed to a point where development of the heat pump was demanded by the public.

During the last few years there have been many developments which have changed the outlook for the heat pump. From the mechanical side during the war there were developed hermetically sealed compressor units of three and five horsepower capacity which are readily adaptable to the size of heat pump which will fit the five and six-room houses for which there will be a large sale. Secondly, during the period just immediately preceding the war there has been introduced a large amount of cooling equipment in office buildings and public buildings such as theatres, restaurants, etc. As a result of this contact with summer cooling, the average individual has become interested in, and in regions such as the South, desires this type of cooling in his home if he can afford it. These two factors combine today to make the heat pump an important factor in the future of home heating and cooling. Perhaps at no other time has an undeveloped idea such as this had such a promising future.

The Southeastern Electric Exchange has been cognizant of the rapidly changing situation with regard to heat pump development as well as its potentialities as an outlet for electric power. By establishing at the Southern Research Institute a project on the heat pump, it has expressed to manufacturers of such equipment and to the public its interest in the heat pump and desire to assemble the facts upon which to base future actions. At the time this project was first discussed, it looked as though the heat pump had a considerable way to go before it could be put on the market. Today, there are two manufacturers who have home size units ready for the market and many others who make room coolers and heaters. This advance of the art beyond the laboratory stage poses to the public utilities an important problem on which they will soon be in need of basic information, with regard both to establishing their own policies and giving advice to the public. If the heat pump appears to them to be a coming thing, they must be prepared to take care of the large electric load which it will impose on their urban system.

Basically, the heat pump consists only of four simple elements: the compressor, the evaporator, the condenser, and the expansion valve. While these will vary in size and type from one unit to another, they form the basis for all units.

One of the major factors involved in the utilization of the heat pump, or reverse cycle heating and cooling, is that of obtaining an adequate source of heat for the heating cycle and a

(*Continued on page 80*)

The Southeastern Electric Exchange is sponsoring the heat pump research project undertaken by the Southern Research Institute, at Birmingham, Alabama. A steering committee appointed by the Exchange includes the following members: W. M. Stanley, chairman, Charles F. Lane, L. M. Taylor, J. F. Crist, Jerry Watson, C. W. Hamilton, and Charles S. Thorn. Among the main points to be studied are:

1. Survey of heating and ventilating equipment manufacturers to see what is in progress in regard to heat pump developments.

2. Investigation of the heat pump possibilities as applied to the Southeastern Electric Exchange area.

3. Investigation of units now available on the market to determine what performance can be expected of them.

4. General survey of existing heat pump installations.

5. Study of installations of the heat pump in actual homes.

6. Survey of what the electric utilities can do to promote the development of the heat pump.

7. Development of a program for presenting to the manufacturers, heating and ventilating engineers, supply houses, and the public, information of interest to them on the heat pump.

***Dr. Kemler is head of the Engineering Research Division, Southern Research Institute, Birmingham. This article is adapted from an address before the Annual Conference of the Southeastern Electric Exchange, at Edgewater Park, Miss., April 25, 1946.**

THE SOUTH CENTRAL WIRING FORUM

In a one-day session closely packed with action and with utility representation from Wichita, Kansas, to New Orleans, La., the problem of where and how to sell adequate wiring got the concentrated attention of a list of speakers identified with leadership in the industry in a forum at Fort Worth, Texas, the last day of April.

It was the South Central Wiring Forum, sponsored by the National Adequate Wiring Bureau with three staff members in attendance, and it was presented in connection with the Texas Electric Show of 1946, in turn sponsored by the Texas Electric Service Company, of Forth Worth.

Several utility representatives related experiences in the promotion of adequate wiring and concluded that incentives, for some sections of the consumer public are necessary.

One speaker declared that the greatest need for selling adequate wiring was in small towns, which have neglected the program.

The principal speaker contended that, although there are a number of barriers to adequate wiring, removal of one barrier alone will result in near-magic progress.

The contractor's viewpoint was introduced from two sources and bureau staff members explained in detail, illustrating with charts, the work they are doing in conjunction with numbers of interested organizations.

Changed Public Attitude

One of the bureau staff members, E. S. Northrup, promotion and field service, declared between sessions of the forum that, having recently returned from service with the armed forces, he finds a vast improvement in respect to the willingness of people in general to listen to arguments for adequate wiring as compared to pre-war interest. As a result, he predicts vast strides of progress.

Other staff members in attendance and on the program were J. F. Biggi, secretary of the standards approval sub-committee, and Miss Frances Armin, director of consumer education.

The forum was conducted from the stage of the elaborate auditorium of the Will Rogers Memorial building which, in another wing, housed the massive Texas Electric Show. During intermissions, forum participants gave their attention to exhibits and at conclusion of the forum, there was a special showing of the General Electric House of Magic.

Sam Brolund, division manager of the Kansas Gas and Electric Company, made the principal address on "The Barrier to Electrical Expansion," at the South Central Adequate Wiring Forum held in Fort Worth, Texas, on April 30.

Chairman for the day was J. H. Apperson, residential and commercial sales manager for the Texas Power and Light Company, of Dallas, and Mr. Apperson opened the meeting with the declaration that it was appropriate to make adequate wiring a part of the Texas Electric Show, "for if the appliances shown here are to fulfill their purpose, they certainly require adequate wiring."

Introduced by Mr. Apperson, J. B. Thomas, president of the Texas Electric Service Company, welcomed the participants to Fort Worth and the show his company sponsored and expressed the opinion that the path of adequate wiring is the only possible path for a utility to travel.

"Most of the wiring in our territory was installed ten years ago," he added, "and it is wholly out of date. People are learning that more and more the comfort, ease, and delight of a home come to them over electric wires, and progress in the arts of living will create a demand for electricity that none of us can now visualize.

"Present wiring is only half big enough for what we want to put through it in the next ten years. Let's be concerned about getting a free, adequate, elastic channel into these houses—a channel that will provide the home with all the comforts and delights I mentioned. But we must see to it that that channel is as inexpensive as is consistent with adequacy."

The principal address was delivered by Sam Brolund, division manager of the Kansas Gas and Electric Company, Wichita, whose subject was, "The Barrier to Electrical Expansion."

Lamenting the utility customer habit of loading circuits far beyond their capacity, Mr. Brolund said such customers were experimenting with wireless transmission of electrical energy. Many of them think it is entirely reasonable, he said, to put 2200 watts of demand on a circuit that was designed for 1700 watts. Such "electrical five-year-olds," he added, would not think of attempting to put five quarts of water into a gallon container.

One Barrier to Good Wiring

"So, I sift our problem down to one barrier instead of a number of barriers. I am aware that there are plenty of barriers to good wiring . . . barriers which are real and vital. There is the barrier of cost which we have talked about so much, there is the barrier of material shortages, the barrier of speculative building in which wiring takes it on the chin because the wiring is hidden, and you can't see it when the house is shown. There are other barriers, galore. But there is not one barrier from cost to customer, from blue print to building contractor, that cannot be cured if we cure the main, underlying, fundamental trouble.

"And the cure is simple: we have to get rid of the condition in which our customers are completely oblivious to what makes their electrical service tick.

"Cost is a relative matter. An outside 'backhouse' costs less than a bath-

room; a pump on the back porch is cheaper than a water system; poor wiring is cheaper than good wiring. But why do homes with two beautiful bathrooms have circuits and service entrances that are the electrical equivalent of a one-holer? Why do homes with beautiful chromium faucets and everlasting copper pipe have wire and switching that is comparable to an old-oaken bucket? The only answer is that our customers are totally uneducated, electrically speaking.

"Sure, speculative building is a problem. A man who is building homes for sale is building them for sale, not to satisfy some inner urge to perfect the building arts. When he sells a house, a two-bit added investment in a bronze door knocker may give him more sales appeal than two hundred and fifty dollars invested in a wiring job. Is that his fault? He's a man who has put his own money into the housing he builds and he's a sales man and he knows he must get that money out of it. Or go broke. If he can put in a door chime that the house-looker will remember as he goes the rounds looking at other houses, that's better than putting in a range circuit that the customer doesn't know anything about. And why does the bronze door-knocker or the chime have more appeal than a good wiring job? The only answer, again, is that the buyer hasn't been taught the difference between a shoddy electrical bargain and a sound investment.

"We have worried a lot about the barrier that exists at the architect's level. Well, I have known a lot of architects who bewailed the fact that their clients wouldn't let them put in a good wiring job. I can't blame them for the fact that when it came right down to letting the bid the customer didn't believe the architect when he said that wiring was as important as seasoned lumber. The architect can't hope to educate a customer in one or two conferences. That is the long range job of the men who have kilowatts for sale.

Landscaping Vs. Wiring

"Most people spent more for landscaping than they spent for wiring before the war. Landscaping gives day-in-day-out satisfaction to some people. It shows. The neighbors look at it and admire it. The long summer evenings give you a chance to sit in the evening breeze and contemplate the sweating hours that you put in trimming the hedge and mowing the lawn. It's a great satisfaction. But nobody ever sits in the basement and admires his nice ten-circuit entrance panel.

"I'll venture that a lot of men have ruined their hearts by pushing lawn mowers, although I imagine more of them have done the same thing playing too much golf early in the spring before they were in shape for it. How many of them have ruined their dispositions cussing blown fuses, I do not know. But I'll almost guarantee that not one of them blamed himself or his own oversight for the fact that he had to replace a blown fuse or reset a circuit breaker. He doesn't know whom he's cussing, maybe it's the appliance manufacturer, maybe he thinks it's the wiring contractor, probably he cusses the electric company. He never cusses himself because no one has ever taken the trouble to point out that he had a responsibility in the matter.

"So, my remarks are directed at the point where the one real barrier exists — the customer's mind. We have done everything else. We have talked to ourselves, given ourselves pep talks; we have talked to the wiring contractors, never once stopping to think that since good wiring was their bread and butter that it probably sounded silly for utility men to talk to them; we have talked to architects and building contractors. As a matter of fact, we in the utility business have done everything wrong about wiring because we have, in the language of that old church confession, 'done those things which we ought not to have done and left undone those things which we ought to have done and there is no health in us.' If you change health to wiring you have a rough idea of our cardinal sin.

"So, our policy for the future is simple and to the point. We are going to try to work on the customer's consciousness instead of the builder's conscience; we are going to make the customer want more wiring instead of urging the contractor to charge him less; in short, we are going to try to

The morning panel of the South Central Adequate Wiring Forum held in Fort Worth, Texas, on April 30, on the subject, "Organization and General Promotion," consisted of, right to left: J. H. Apperson, chairman of the forum, Texas Power and Light Company, at microphone; P. M. Rutherford, moderator, Dallas Power and Light Company; E. N. Avengo, New Orleans Public Service Company; H. M. Walne, Dallas Power and Light Company; Miss Frances Armin, E. S. Northrup and J. F. Biggi, all of the National Adequate Wiring Bureau.

turn our customers into intelligent electric service users who will cease to value lightly the importance of the electrical system in their houses.

"We're going to try to make every customer demand good wiring in a house he buys, put good wiring into a house he builds, feel guilty until he re-wires his old home if it is inadequately wired.

"How are we going about it? For one thing, we're going to quit pussyfooting. How many people know that a long run of insufficient capacity lowers voltage? Not very many! But we're going to tell them! How many people ask about the wiring when they look at a house? Not very many, if any at all. But we're going to tell them how and when and where to tell whether the house they buy is a wired home or a 'sell'. We're going to tell the builders first, of course. But we're going to tell the customers, loudly and longly."

Reddy Linked with Wiring

Mr. Brolund reported that in his company it was decided Reddy Kilowatt was so well known that he should be linked with adequate wiring, so their slogan is, "Reddy Kilowatt wiring is adequate wiring."

Further, he said, they decided they must get attention for the wiring story at a time when something else influences a customer to pay attention to wiring. Such instances are remodeling the home or kitchen, building a new home, buying a new home, or purchasing a major appliance requiring special wiring. The program is designed to reach all these groups, including speculative builders and by use of radio programs and newspaper advertising, the company expects to make a "permanent dent" on the consumer's consciousness, other than to just get names and addresses.

"Many G.I.'s who served in the European theater have come home with a new word," sad Brolund. "It's an old Russian standby called "Kaput'. It means 'Broke', out of commission, busted. Wiring that blows fuses is Kaput wiring. We have said so in our ads. We will say so again and again and again, to coin a phrase. Maybe we will ultimately reach a point at which our customers will link everything bad about bad wiring with their own failure to install good wiring. At that time the main barrier will be broken and then you can have some one come here to talk about the other barriers.

"For my part, the lack of interest of our customers is the only real barrier at present and it can only be eliminated by educational selling and promotion. That is our job — utilities, wiring men, architects, builders. And I have a sneaking feeling that the other barriers will look easy when we have that one bulldozed out of the way."

Following Mr. Brolund's address, Chairman Apperson turned the meeting to P. M. Rutherford, moderator of the first panel on "Organization and General Promotion." He is advertising manager for the Dallas Power and Light Company.

Mr. Rutherford in turn introduced H. M. Walne, residential sales manager, also of the Dallas Power and Light Company, who explained the adequate wiring program inaugurated in Dallas.

"In Dallas," said Mr. Walne, "we formed an adequate wiring committee consisting of representatives of manufacturers, wholesalers, utility men and municipal engineering departments and its function is principally planning.

The Dallas Plan

"We employed a graduate architect and trained member of our staff for the work and, although the going was rough for a time, the influence of our work has been felt and today we see more outlets and switches than ever before. As result of our experience we believe that an adquate service entrance and adequate circuits should get the most emphasis, but our program urges that every new home in Dallas be provided with not less than:

"1. Service Entrance Conductors— 3 No. 6 wires for houses with less than 1500 sq. ft. of floor area. For larger houses use 3 No. 4 wires.

"2. Branch Circuits — For houses less than 1500 sq. ft. provide a minimum of 3-15 ampere circuits, 2-20 amp. ckts. and 1-50 amp., double

(*Continued on page 71*)

Afternoon panel on "Specific Approaches to A. W. Markets," shows Lawrence Martin, manager, North Texas Chapter, NECA, at the microphone. Others, left to right, are: E. L. Kenderdine, moderator, chief electrical inspector, Fort Worth; Mr. Northrup; A. P. McNamee, special representative on Appliances and Radio, McCall's Magazine; Miss Armin; J. E. Burton, Burton Brothers Electric Company, Fort Worth; Mr. Biggi; and J. H. Apperson, Texas Power and Light Company and forum chairman.

Broadside view of exhibits at the Texas Electric Show held recently in Fort Worth.

75,000 See New Appliances at Texas Show

THAT TECHNICOLOR glitter on the Western skyline late in April and early in May was the dazzling, million-dollar Texas Electric Show, a dream come true at Fort Worth, after seven months of planning and labor by the Texas Electric Service Company.

Some of the thousands upon thousands who streamed through this shining citadel of electrical living were, however, impressed by an obvious understatement by the sponsor, who described his show as "a dramatic exposition of present-day electrical wonders."

Wonders there were, it is true, but seldom have they been so sumptuously clothed, so artistically arrayed and so artfully presented as to submerge a sense of commercialism, as in this case. That is true at least in the Southwest and it is doubtful if the Fort Worth exposition will fit in anyone's second place among similar efforts of the year.

What the Texas Electric Service Company did was to take ordinary merchandise and present it for public view with the care and showmanship of an expert jeweler laying out on contrasting velvet an exquisite piece of workmanship, so as to show it to its best advantage.

Without this showmanship, 50 odd manufacturers and exhibitors might have attracted the 75,000 people who passed through the exposition in seven eight-hour days, April 26 to May 2, but without the showmanship, people would not have had the mental lift, or the vision of electrical living tomorrow, which was the objective.

TESCO, Texas Electric Service Co., had one outstanding advantage in preparation for this event.

Just two miles from the heart of the Fort Worth shopping district, the Will Rogers Memorial Auditorium spreads itself in landscaped dignity. This "auditorium" consists of two main wings, with a towering pylon in between. One wing or unit is ideally adaptable to such an exposition and here the main show was laid out.

In such a setting the Texas Electric Show had prestige before it opened, for the edifice is impressive. Inside, however, the overall picture was enough to stop rushing youngsters at first glimpse and pop their eyes wide.

The scene stretched away like the inside of a circus tent, except that it was a circus tent made to order for flower shows and evening clothes. The ceiling was a billowing cloud of white, trimmed in pale orange. The walls were of hung velvets of various colors. Against this lower background the displays gleamed vividly, with a thousand bright spots of light and an atmosphere flavored with popular organ music.

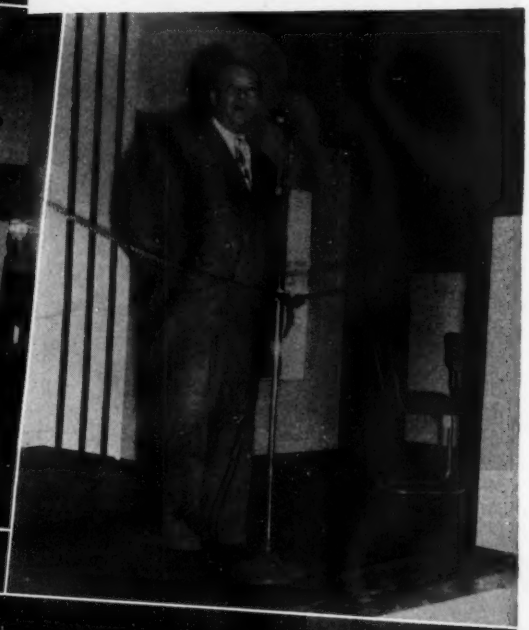
Opposite the general entrance, 250 feet away, the TESCO pylon towered, surmounted by a revolving sphere that sent, from hundreds of imbedded mirrors, shafts of multi-colored light darting through the arena.

The floor space available in the main arena was 252 by 125 feet, so there were more than 31,500 square feet of ceiling draperies, with 1,700 yards of velvet walls.

With such a setting it was not difficult to induce manufacturers to put

(Continued on page 67)

At left above, the imposing Will Rogers Memorial Building where the Texas Electric Show was held. Right above, the exhibit of the sponsor, Texas Electric Service Co.



Of special interest to rural visitors were the exhibits featuring equipment for farm and ranch use. At the right, Fort Worth Mayor Carnrike officially opens the show.

At left, J. B. Thomas, at microphone, Texas Electric Service president, welcomes the visitors. Shown above, key men who produced the show: W. H. Merrick, Jr., TESCO sales manager, and Charles Mann, right.

Relighting with Fluorescents

In show windows, lighting levels may be employed to dramatize merchandise on display, do a three-second selling job to attract passers-by. It is in the war-starved commercial market that lighting salesmen will find their most stimulating opportunities.

By H. H. Green*

BOTH THOSE who sell lighting and those who use lighting to sell, lighting equipment dealers and retailers in every line, are beginning to realize that a nation-wide relighting campaign is beginning.

Electrical wholesalers, contractors, and dealers who handle lighting equipment, and every retail and wholesale store owner and manager will be affected. As Southern electrical men prepare for the brighter days ahead, they may well review the spectacular history of fluorescent lighting, may profitably consider just what this new light source can mean to them in increased opportunities for sales and service.

Starting in 1938 with 200,000 sales, at the end of the fifth year, despite the virtual suspension of new commercial installations imposed by war, fluorescent lamp sales reached the amazing total of 37,000,000. Survey after survey has confirmed the widespread acceptance of fluorescent lighting.

Because of restrictions on retail installations in the war years, fluorescent has had only a limited opportunity to show what it can do in retail stores. Retail men, however, have seen the light, the new fluorescent light in the stores of a few of their competitors. Eight out of ten have said that they want and plan to buy modern lighting.

Today, in the minds of a more light-conscious public, fluorescent lighting is synonymous with modern lighting. A wide variety of shapes and sizes have been added to the first line of standard fluorescent lamps. Among these are the new slimline and circline designs. Fixture manufacturers have provided a wealth of new luminaires, some of which incorporate filament spotlights to emphasize merchandise display.

New portable light sources for the home will employ a combination of old and new light sources. Adapted to every type of residential, commercial, and industrial applications, the new lamp and fixtures offer a choice of recessed, suspended, or surface-mounted installations.

As Southern salesmen prepare to

***Mr. Green is associated with the General Electric Lamp Department, at Nela Park, Cleveland, Ohio.**

make the most of the splendid new lines of lighting equipment, a word of caution may be in order. Many lighting men may recall that in the first few years that fluorescent lamps were on the market the popularity of the new light source, while a stimulant to sales, proved to be an actual detriment to good lighting. Too many inadequate installations resulted from too quick selling. On one retail survey, 82% of those who bought the first fluorescent lamps and fixtures obtained the kind of lighting that was inadequate to their needs.

Wholesaler's salesmen who start their relighting campaigns with the idea that they are selling only lamps and fixtures may be too ready in a seller's market to hurry along to the next customer before they have sold the first one the kind of installation he really needs.

Only as they sell modern lighting at its best, rather than lamps and fixtures, can Western salesmen properly serve the kind of market that has never existed before, the kind of demand that may never come again. To help them sell lighting that is profitable to themselves and their customers, the salesman might well keep in mind some of the benefits that modern lighting illumination assures.

In plant and shop, let them determine just what lighting levels are needed for more accurate production. Let them sell the kind of overall industrial lighting that will banish shadows, reduce specular reflection, eliminate contrast. Let them sell the kind of supplementary lighting that will reduce glare and raise the intensities on machine or work bench to proper levels for precision seeing.

It is in the war-starved commercial market that lighting salesmen will find their most stimulating opportunities to sell modern lighting at its best. To aid them in reaching this goal, a brief outline of some of the benefits of modern commercial lighting follows.

Lighting experts of the General Electric Company say that "Seeing is the biggest thing in selling, and lighting is the biggest thing in seeing."

Whether on the gondolas of food stores, or special displays in fashionable shops, extra light means extra customer attention, quicker appraisal and increased sales. Alert salesmen will study the benefits of modern lighting for attraction, atmosphere and appraisal.

In the minds of a more light-conscious public, fluorescent lighting is synonymous with modern lighting. A wide variety of new lamps and fixtures have been developed to provide a wealth of new lighting tools. These will adequately serve the needs of every type of commercial interior.

Lighting salesmen who start at the street and follow through the entire store can readily determine the locations in which higher lighting levels will speed sales.

In the show windows, high enough levels should be maintained to dramatize the merchandise on display, do a three-second selling job with passers-by. In the interior, lighting engineers prescribe varying lighting intensities for different sales and service areas. It is a general rule that in order to utilize the maximum force of sales lighting, intensities of no less than double that of their surroundings should be used on merchandise displays. Whether on the gondolas of food stores, or island displays of fashionable shops, extra light means extra customer attention, quicker appraisals and increased sales.

The alert lighting salesman will study the benefits of lighting, not only for attraction and appraisal, but also for atmosphere. He will not be content to sell functional lighting alone,

(Continued on page 67)

Good-by, Machine Age!

Postwar Family Suffers Reconversion Crisis Which Is Characteristic of Millions

By Richard Lee Strout*

"Some go out in a spectacular finale . . . like the waffle iron the last time we had company."

MYRTIE SAYS the washing machine has stopped again. The typewriter won't work. In the sewing room the electric machine will operate all right if you know where to push the loose connections. The old automobile—well, let's not talk about *that*. As to the radio, that's the worst of all. The radio, folks, has reached a stage where even Raymond Swing isn't safe, and where it's always a question whether Information Please is worth the battle. Even our dog, sometimes, is frightened by our radio—the ominous sound of the Machine Age collapsing.

To come to the point, our postwar family is suffering a reconversion crisis that must be characteristic of millions of others. It faces a mechanical breakdown. Yes, of course, this isn't Europe and we have plenty to eat and no ruined homes. We have no cosmic reason for self-pity and mechanical failure is only, at worst, a relative aggravation. But an aggravation, folks, can be dreadfully aggravating. The United States is the most highly mechanized nation on earth, and domestically these machines are wearing out. Some of them just quietly stop; some wheeze along for a while, like the electric clocks, before throwing in the sponge. Some go out in a spectacular finale, mixed with boiling batter, like the waffle iron the last time we had company to Sunday supper. Of all the equipment in my particular family, the most constantly annoying, the most steadily exasperating, and the most inscrutably enigmatic, is the radio.

The radio has been like that all during the war. I haven't any sympathy for it at all. It started malingering even before Pearl Harbor. Talk about patriotic sacrifice, our radio hasn't an iota of self-respect, pride or military forbearance. It would just as soon fade out on a "D-Day" broadcast as on a canned soup advertisement. On the one or two occasions when I have been trapped into going on the air and broadcasting myself, the family always has the ancient supplementary radio up in the bedroom warmed up in reserve, in case the downstairs radio, the one I am talking about, walks out. Generally, however, the downstairs one under such circumstances simply bides its time. It is a sly, moody, vindictive creature, and it has gained its ascendancy as much by guile as by patience.

At first we tried taking it to the radio dealer. That was a long time ago, when the World War was still young. The radio shops didn't know our machine very well then. Just to look at it, it is rather a nice piece of furniture. It has a phonograph attachment and places underneath where you put in albums. Sometimes in the hot Washington summers the phonograph records soften up and bend (you will just have to take this on trust) and they come out like wilted pie plates, or Salvador Dali watches, and you can't play them. Nothing delights our radio more.

"I have caused considerable interest among visitors by speaking sharply to my radio from across the room."

As I say, we used to take it periodically to the repair shop. The trouble is really simple: it has a basic mechanical flaw. The tubes are not plugged to the floor of the box, as they should be, where they would stay in place, but instead of that some maleficent designer put them in on the side. This means that it is impossible to keep them tight for any length of time. Either they, or the aluminum screens, get loose. Then the most terrible noises develop.

The best way to meet this situation is to put your hand in, around in back, and hit various tubes. Some of them are hot, but you get to know which by experience. Every member of the family now knows the trick, even our five-year-old. A good vigorous slap will sometimes cure it. I have caused considerable interest among visitors by speaking sharply to my radio from across the room when it misbehaves, accompanying this by a

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stamp of the foot. To strangers its prompt improvement nearly always seems an unusual circumstance. For weeks at a time it will behave beautifully. That really explains its continued presence. But then it will get temperamental over some program of which it disapproves (it is apt to take violent umbrage at remarks in a Town Meeting debate). Then it sulks for a month.

I can remember those stimulating far-off days at the start of the war when the radio repair shop would greet me brightly with word that everything was fixed, charge me $35, and reinstall the machine. Often our radio would go as long as three or four days after that with good reception.

My brother-in-law, Albert, who is a well-known television expert, has spent hours studying our radio. Being built as it is and full of heavy phonograph albums, this nearly always means getting down on the floor, on one's back, with a lot of bridge lamps turned upside down and the chairs cleared away in a sort of prize ring. Albert has rolled around on the floor for hours with our radio. The children love it. Even now I sometimes note Albert's eyes lingering sadly and reflectively on the impassive, veneered exterior of the hateful machine as he chats after tea, and I would never think of turning it on while he is in the house. The thought of having to control a large electrical instrument like that by the crude process of banging on its lid would infuriate any self-respecting engineer.

There is a good deal more I should like to say. I have plans to buy another radio, set it up surreptitiously in the next room, and then—bide my time. But I can't go into that now. Myrtie's washing machine is ailing again—I can tell by that missing note in the cellar rhythm. My wife is calling to see if I will fix the refrigerator. Great Scott! the electric clock has stopped.

Yes, folks, the Machine Age may not be coming to an end—but in my family it is certainly slowing down.

Comprehensive Dealer Program Launched in Mississippi

FIRST STEP toward helping electrical appliance dealers secure the greatest possible volume of electric and gas appliance and equipment sales has been taken by the Mississippi Power & Light Company in announcing a post-war revival of an annual sales program that was initiated back in 1933 and discontinued during the war.

Les M. Taylor, vice-president of the company, outlined these points in the cooperative plan designed to obtain maximum sales of electric and gas services in the greatest market ever anticipated in the history of this state.

This program would:

Assist dealers with window and store displays and other material designed to promote increased sales.

Furnish dealers with market surveys and analysis to enable them to direct their sales efforts more effectively.

Revive "Dealer Dynamo," a newspaper published by the company to give the dealers of western Mississippi news of electric and gas equipment and appliance sales activity in this area.

Analyze manufacturers and distributors sales programs and show dealers how such programs can be tied in with Company programs for more effective selling.

Originate and supervise sales programs to create a greater customer desire for more gas and electric equipment.

To insure maximum effectiveness of its program, Mississippi Power & Light Company will have available three sales promotion representatives to work directly with all sales allies. These representatives will be thoroughly trained and qualified to help dealers in perfecting their sales organizations, in developing and conducting sales training and promotional sales programs.

The company's sales promotion representatives will:

Furnish market information, keeping dealers up-to-date on the results of market surveys and analysis.

Maintain records, covering all sales allies in his territory. A complete system of record cards will be valuable as a quick, permanent reference of dealer operations and needs.

Provide sales training programs for dealers and their sales personnel, using fundamental sales principals (8 films); commercial service applications (4 films on lighting, cooking, and motor applications); residential lessons on selling farmers better business practices, including illustrations showing use of electricity on the farm.

Aid local sales promotion and campaigns, by working with the company's sales promotion and advertising section in helping dealers reach specific local markets.

The company's home economists in each division will assist dealers in creating demand for electric appliances and equipment. Each economist's program will include:

A minimum of 40 demonstrations in schools.

Conduct of 4-H electric clubs and demonstrations for farm women's groups.

Specific training of dealer salesmen in applications and uses of products.

Dealer group training demonstrations.

Arrangement with dealers for floor demonstrations on electric equipment on local sales floors.

Commercial salesmen and industrial sales engineers will work closely with dealers who handle commercial equipment, commercial appliances, and with contractors who do commercial and industrial wiring and motor installation.

They will also be of maximum assistance to dealers as follows:

Canvass their territory to recommend and sell commercial lighting installation. Since the company does not sell major equipment or wiring, the commercial salesman will work with dealers in his area who do handle such equipment and can make installations. The company has found in the past that a dealer who installs lighting, wiring, or other jobs according to proper layout, will greatly increase his gross sales and thereby his net profits.

Commercial salesmen in contacting commercial customers will obtain prospects for commercial equipment and appliances such as refrigeration, air conditioning, air-cooling equipment, and other profit-producing appliances. The names of such prospects will be passed on to dealers who handle the type of equipment specified.

All company personnel will be on the alert for new prospects for electric appliances and equipment, and dealers will be furnished with such prospects' names in a uniform manner.

INTERNATIONAL LIGHTING EXPOSITION

By W. A. Feuillan, Jr.

Southern Region Vice-President
Illuminating Engineering Society
New Orleans, La.

THE MOST HEARTENING thing about the International Lighting Exposition held in Chicago, April 25-30, was the large number of really good lighting fixtures on display; visible evidence of constantly improving quality (better glass, better metals, plated finishes), new refinement of design (trimmer, smaller, sculptured styling) and better value (more quality for the dollar) but some prices did seem higher and you heard a persistent, insistent refrain: "ballasts are going up", "sockets will be higher", "the steel strike put us 60 days behind," "the coal strike will further delay production".

But the future seems to be brightening. In a matter of months, we can expect the new, slimmer, smaller, streamlined lighting fixtures produced by efficient, reconverted war machinery and war-born know-how. They give promise of more attractive and better-engineered fluorescent lighting. All are coming and soon. There may be further delays but better merchandise is definitely on the way. Customers are eager, ready for it. And there are plenty of them.

The daily conferences, ably directed by leaders in the industry, provided first hand, authoritative information on advancement in techniques and utilization of lamps, lighting equipment and other aids to Better Seeing and Better Selling.

The show was an occasion to renew contacts and friendships and to make additional ones. Its sponsors were unanimous in predicting that we would see more shows, with one scheduled for the East in 1947 and others to follow at periodic intervals, if not annually.

And if you looked a little further than the displays themselves, you saw serious effort to pre-sell customers. Most of the manufacturers showed complete advertising programs to translate interest into demand and to get ready acceptance for better lighting and better fixtures.

I'm still optimistic . . . business is going to be good when goods start coming, and it won't be long now!!

SHOWS PROGRESS IN FIXTURE DESIGN

Utilities Attack Peace-Time Problems At Thirteenth Annual Conference

THE OUTSIDER'S point of view of the light and power industry got special emphasis at the 13th annual (and first postwar) conference of the Southeastern Electric Exchange, held at Edgewater Park, Mississippi, April 24th to 26th. Discussion on a wide range of topics of special interest to light and power executives was climaxed with the presentation of special certificates of merit to the light and power companies for their wartime service by both the Army and the Navy.

Among the light and power men who addressed the conference were E. A. Yates, Commonwealth and Southern Corp., and W. A. F. Stephenson, of Florida Power Corp. In discussing the utility industry's record in war and peace, Mr. Yates recounted the difficulties of financing early power developments and the difficulty of building hydro plants on navigable streams before a national policy was adopted in 1920. The postwar policy of government, he said, promises the construction of a number of hydro power projects in connection with navigation and floor control. He expressed the hope that the government policy in the sale of this power would be such as would permit its distribution through existing companies, with savings reflected in reduced rates to the public.

Greater demand on the part of industry for decentralization and establishment in the South, Mr. Yates said, is evident. The Commonwealth and Southern Corp. will require some $50,000,000 for the expansion of its southern facilities in the next two years. In conclusion, he pointed out that the government plants now in existence are here to stay, and he urged the private companies to "bend over backward to cooperate with them."

Under the heading, "What Should We Anticipate?", W. A. F. Stephenson, of the Florida Power Corp., discussed future possibilities in many phases of the light and power industry's business, including public power policies, taxes, politics, and load building.

"The fight to prevent the development of public water resources for power purposes has long since been lost," Mr. Stephenson told the conference. "The fight to assure that all but the minimum of inter-project transmission and all new steam generation will remain in private hands can be won with realistic and intelligent initiative in the form of a sound and honest plan."

He directed attention to a line of thinking that holds alarming possibilities which the companies don't seem to realize fully: "This visualizes that public purchasers, such as municipals or REA's, may negotiate directly for federally generated power, even though they are at great distance from the federal source. The private companies owning the transmission lines between may then be required to make delivery at a small fee. This fee determination alone would end in such complexities that the chasing of the kilowatts around large transmission maps with blue and red pencils, plus the necessary voluminous reports

and studies, could become a very heavy burden. The public purchaser as a customer of the private system, buying energy at a rate which recognizes honestly the cost of the power when obtained from federal sources, is a very different, sound and simple principle. The question of which is the customer of which is of prime importance.

"What about another look at the general development of public power at the federal level? It is easy to foresee that there will be a gradual development along the lines of the statutes now on the books. Municipal, REA and any other preferred purchasers will continue to have first call on power available. No Government is likely to sacrifice the idea of connecting its water power projects to each other to gain at least the advantages of diversity, but whether it goes beyond that point and into the construction of spinal transmission lines will rest entirely with the private utility companies.

"If the Government is to be dissuaded from constructing spinal transmission, there is an urgent necessity for the companies to do three things:

"Firstly, for the companies in a region, and the individual companies with their portions of a regional plan, to prepare on their own initiative programs for the transmission and absorption of this power. Standing by until the Government's plan is unfolded will merely mean the same old losing fight to destroy a plan of which someone has become very proud.

"Secondly, for each company, recognizing the trend of public policy, to prepare to go as far as it honestly can in the development of such a program. The basic public policy already is the law and will be fought for. Where conflicts arise in the development of a program for presentation to the Government, the conflicts had best be resolved in the public favor.

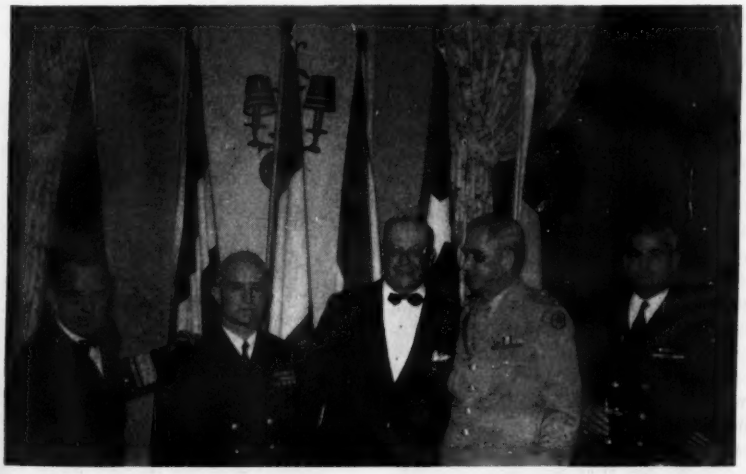
"Thirdly, privately owned transmission systems will have to be fitted into any plan on the basis of honest and fair compensation for the service they perform."

How to meet the threat of municipal ownership, was the subject of Francis X. Welch, managing editor of the *Public Utilities Fortnightly*. He suggested that often in the past the light and power companies' efforts to combat this threat has been aimed in the wrong direction and, often, at the wrong time. It has been poor psychology to take a defensive attitude which, too often, has started as a lobbying activity before legislative bodies and has ended as a legal course of action in the courts. And it is even worse, he said, when they defend their case on a legalistic basis instead of a public relations and public benefits basis.

A public relations officer, he told the conference, is more likely to get favorable results than a legal officer. Companies can well afford to take a leaf from the public ownership people, who take the initiative and offensive—they don't bother to answer questions and write letters to the editors.

He suggested that the companies should take a more realistic viewpoint toward the sacred right of the public vote. They have nothing to lose from a fair election, he said. "From estimates compiled from available information sources which I regard as most reliable, principally from data of the Edison Electric Institute and of my own publication, it appears that more than 1100 municipal elections have been held in the United States since the beginning of 1933, involving propositions on the issue of public ownership of local electric utility services. I cannot positively guarantee that this record is absolutely complete. But it is as complete and accurate as I have been able to ascertain. Moreover, I am certain that omissions, if any, are

W. E. Wood, left, of Virginia Electric and Power Co., newly elected president of the Southeastern Electric Exchange, confers with E. L. Godshalk, of South Carolina Power Co., retiring president of the Exchange.



E. L. Godshalk, center, president of the Southeastern Electric Exchange, confers with Army and Navy officers who presented awards of merit to the light and power companies for their wartime services. Next to Mr. Godshalk are Brig. Gen. James B. Newman and Rear Admiral J. T. Mathews.

few and of such relatively slight importance that they could not possibly alter the balance of the relative percentages summarized in any significant degree one way or the other. First, let us consider these elections as separate units. Out of a total of 1,165 elections since 1933 to date, 523 were favorable to public ownership, while 642 were unfavorable. Percentagewise, this means that 55 per cent of all municipal ownership, elections since the beginning of 1933 through the first quarter of 1946, were unfavorable.

"When we eliminate some of the earlier years of the New Deal administration, when the PWA was active with its program of loans and grants-in-aid of municipal plant construction, we find that the proportion of unfavorable election results has increased during more recent years as the PWA influence decreased and was finally eliminated.

"Thus, during the little more than a decade, from 1936 through the first quarter of 1946, we find that 62 per cent of all such elections were unfavorable. And during the last 5¼ years, starting in 1941, and embracing the entire war period, 73 per cent of all such elections were unfavorable.

"This preponderance of local voting sentiment against public ownership is even more striking when we give weight to the relative population, involved in the voting, as distinguished from the percentage results derived from individual municipal elections computed as separate units.

"A total of more than 31 million people went to the polls in these municipal elections, beginning with 1933. More than 19 million of them, or roughly 61 per cent, voted against the municipal ownership propositions. Here again, if we omit the earlier years of the New Deal, when the PWA was most active, we find that 87 per cent of all votes cast during the last 10¼ years were unfavorable and almost 90 per cent of the votes cast since the beginning of 1941 to date, were unfavorable.

How to Win Elections

"So much for statistics. The practical question naturally arises at this point—how to win more of these elections when they occur? It is not practical for me to attempt within the framework of a single address to outline the details and mechanics of such possible counter action. I can only generalize by saying that the attack—and you notice I use the word "attack" rather than "defense" should be upon the broadest possible front. It should appeal to the investor. It should appeal to the utility employee. It should appeal to the rate payer. It should appeal to the tax payer. These are all overlapping classifications, but each has its separate area of self-interest. The cumulative effect of such a quadruple impact on these four fronts means gaining more votes, and may well mean the difference between winning or losing an election, or better yet, eliminating even the demand for an election.

"How can the utility company appeal to the self-interest of the investor? There are weaknesses in public financing, particularly in the revenue bond field, that can be exploited. If some private companies attempted financing on the same basis as these unregulated public ownership setups, the SEC would jump on them like a duck on a june bug. Recent decisions of the Supreme Court, as well as common sense, suggest that the tax exemption feature used as a lure by public securities must eventually prove illusory. These are good subjects for exploitation.

"How can the utility appeal to the self-interest of the employee? We all know that the right to strike and bargain collectively is inherent only in private enterprise. It becomes illegal when attempted against the government. Every time public ownership steps into the picture, the bargaining rights of the employees vanish. There were and are no strikes in totalitarian countries where public ownership prevails. Notwithstanding efforts of some labor leaders to delude their followers on this subject, there is an obvious golden opportunity to persuade the employee that his best interest and security lies in a parallel direction with private enterprise.

"How can the utility company appeal to the self-interest of the rate payer? The obvious angle here is the exploitation of the discrimination which public plants practice against millions of consumers in the form of tax discrimination. Comparisons of rates and services when proper discount is made for these unwarranted preferences, can make the consumer aware that so-called rate advantages of public ownership are a fraud, a sham, and a "loss leader" designed to cover up political opportunism. And the same arguments can be made even more forcefully to the self-interest of the taxpayer. So far I have merely referred to public ownership in the electric field. But the same trend towards federalism — away from local voting and local responsibility—is already at work in other fields of business enterprise, including the gas and telephone utilities. That great elder statesman, Bernard M. Baruch, told Congress only a month ago, referring to centralized federal controls on business: 'If a close-fisted policy squeezes every bit of profit out of industry in order that some segment of society may be advantaged – the government to be the sole judge of this—we will arrive at an economy with our industries nearly all nationalized without a vote of the people.'

"But most of all, the utility industry must believe in itself. It cannot hope to persuade others unless it feels, honestly and sincerely, that it is engaged in a beneficial and righteous enterprise. If the utility industry does not start out with this premise, if it does not believe in itself, first of all, then everything else is futile. Self-conviction is far and away the most important, the most indispensable feature in any utility company's program to combat the threat of municipal ownership."

Another conference speaker also addressed the group on "Public Ownership," Walter H. Burke, vice-president of Ebasco Services, Inc., who said his subject was just another name for "State Socialism".

"If the people expect the 1946 model of free enterprise to provide them with the blessings they have enjoyed in the past," he said, "they, through their Congress, will have to eliminate all but the most necessary Government controls — wage, price, and others. Those that remain must be administered by capable people whose main objective is not to make America over nor to impose on the country obsolete ideologies which have never yet failed to pauperize the people and, ultimately, to make them slaves of an all-powerful State.

"Despite the findings, opinions, rules, regulations and edicts of Government bureaus and other public officials, the fact remains that you can't get blood out of a turnip. As I have said, it requires an average investment of $6,000 to provide one job in our manufacturing industries. Until that $6,000 or its equivalent is provided by someone, our one industrial worker can have no job. The investor comes first, the job follows and from the joint efforts of the employee and investor comes the product. No one has anything to sell until it has been produced. It can't be produced unless the investor is satisfied that he has a reasonable chance of earning a fair wage on his capital. Nor can it be produced

(Continued on page 64)

Florida "Linemen's College" Solves Manpower Problem

To SOLVE an acute personnel-shortage problem in its distribution department, the Florida Power and Light Company adopted a short cut. It has inaugurated, at Miami, an intensive training course to teach prospective linemen the technique of this complex type of work. And, already, this "Lineman College" has to its credit about 20 graduates who, now, are out working on the company's distribution lines.

In addition to losing line personnel to the Armed Services, during the war, FPL was unable, in that period, to train enough new men for this kind of work. Further complicating the situation, was a pyramiding demand for new line installations to serve industrial, commercial and residential users of current—a demand stemming from a war-caused backlog of orders and from new construction.

The company, first, attempted to rebuild its line force to needed strength by a campaign to recruit experienced linemen in the larger population centers throughout the South. This promotion worked to the extent that FPL was able to get the number of men it wanted. But the plan failed to attain its full objective, because the local housing shortage made it impossible for more than a few of the recruits to find suitable living quarters. As an alternative effort at solving its distribution manpower problem, the company decided to try out a lineman training program.

"Distribution linemen," explains P. J. Carlin, FPL superintendent of distribution, "have to be possessed of physical agility and mental alertness. Both are highly necessary to the work they do. Therefore, the men chosen for training were selected from applicants in the 21-to-30 age bracket, as most likely to have the required physical and mental qualifications."

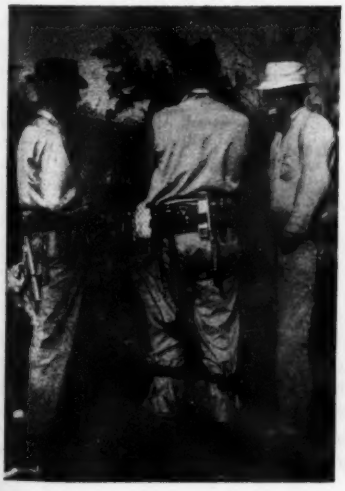
Of the candidates enrolled for the course, approximately 75% are ex-servicemen. And, of the total number, a sizable portion, formerly, had worked for the company. A few had served as line helpers for the latter or some other utility. Most of the "enrollees," however, never had done any line work at all—only two ever had worn "hooks"—but they were men to whom an active, outdoor job appealed. A majority of the former FPL employes admitted to the school, previously, had worked in departments other than distribution.

The enrollees were hired in, and given a pay rating, as ground helpers. When graduated, they are qualified to serve as lineman apprentices or, in some instances, as linemen.

An out-of-door "classroom" was established on vacant ground space adjoining the company's Miami transformer repair plant on N. W. 7th Street, just east of 7th Avenue. And the "trainees" were divided into two groups or "classes" of 10 men each. These groups spent alternate weeks in the "classroom" and with line trucks in "the field."

Thus, working as ground helpers, the trainees had opportunity to observe the practical application of the things they were learning in "class". Moreover, they were switched from one line crew to another, with a view to working them on jobs tied in with subjects already covered in "class." In this way, they had a chance, too, to note differences in the individual technique, with which veteran linemen performed comparable tasks, and, so, broaden their own knowledge of operational methods.

All instructional activities were conducted under the general direction of Max Bose (pronounced "Bo-sie"), district distribution superintendent. Assisting him, as "faculty members," teaching in their own particular fields,



The manpower shortage is being overcome successfully by the Florida Power and Light Company's distribution department by means of a well-planned lineman training course. Here are typical scenes snapped at the training school. (Left) trainees are supplied with regulation lineman's equipment and are taught its use. (Center) W. H. Steele, one of the instructors, shows William Skinner, trainee, the proper pole climbing technique. (Right) Trainees load line truck. Those selected to take the course spent alternate weeks working as ground helpers on actual line installation work.

Four members of lineman school "faculty" (left to right) Max Bose, district distribution superintendent; W. H. Steele, acting distribution supervisor; R. O. Bushnell, distribution supervisor in charge of metering and "services"; J. W. Beville, assistant to Bose. Other instructors not shown in photograph include G. H. Rennie, safety department; Richard Hoeller, assistant to Bushnell; Floyd Norton, radio interference technician; James Brown, safety department; and C. C. Smiley, distribution foreman.

were W. H. Steele, acting distribution supervisor; R. O. Bushnell, distribution supervisor in charge of metering and "services"; J. W. Beville, assistant to Mr. Bose; G. H. Rennie, safety department; C. C. Smiley, distribution foreman; Richard Hoeller, assistnant to Mr. Bushnell; Floyd Norton, radio interference technician; and James Brown, safety department.

The company's only guide in setting up a curriculum for its Lineman College was a training course it had conducted for a short time, before the war, and data on schooling projects conducted by a utility in the South and one in the Southwest. However, none of these courses — its own or those of other power companies mentioned—covered as much instructional ground as FPL wished, so its distribution executives started, at scratch, in formulating a teaching schedule. And, in order to record step-by-step instruction detail, for future use, Mr. Steele and other instructors jotted down in a loose-leaf notebook what was taught each day.

As a major policy, in handling classwork, the teaching of electrical theory ran parallel with instruction in practical line work. Thus, the trainees could understand why they did what they were told to do. This part of the program was conducted by Mr. Bose, who devoted about an hour to it each day.

Among the subjects covered were kinds of electrical energy and the methods used for generating it, including magnetic and chemically-produced (storage battery) current; d-c and a-c circuits, motors, generators and rectifiers; current characteristics, such as high and low voltage and single and multiple phase; the transforming of current—its purpose, the functioning of transformers and a discussion of the various types in general use; and the distribution of electrical energy by the utility to the ultimate consumer.

Transformer instruction included "laboratory work" in the nearby transformer repair shop. The trainee was shown why transformers failed to function, how they are torn down and reconditioned, and the use of testing instruments, such as voltmeters and ammeters. And, of course, the connecting of transformers was covered, too.

Later on, in the course, Mr. Bose emphasized, during his talks to trainees, the importance of maintaining proper "public relations." He explained that, while a great deal of line work is done in unsettled or sparsely-settled areas, a considerable part of it is carried on in thickly-populated sections, where contacts with the general public is almost unavoidable.

In such cases, people see linemen at work, even, if they hold no conversation with them. These persons are, for the most part, company customers, who are apt to judge FPL by the deportment of its employees. Therefore, the latter should, always, be careful about their conduct. They should avoid any use of offensive language, while at work, and all boisterousness and horseplay during rest periods.

When eating their lunches, employees should not leave papers or food fragments lying around. In brief, as the company's "representatives," they, constantly, should try to assist the company, by their conduct, in its efforts to build up and maintain customer goodwill.

Instruction Schedule

Class instruction began with the teaching of line work ABC's. The notebook record of the first day's "classroom" coverage reads like this: (1) introductory talk by Bose, (2) use of tools and gloves, (3) digging of holes for pole installation, (4) installing poles, (5) climbing instructions and practice, (6) safety instructions, (7) installing and removing low-level cross arms.

The teaching of climbing technique started at absolute "zero." Trainees were shown the proper way to attach the "hooks" to their legs and how to ascend and descend a pole with them. The men were instructed to avoid wearing spurs when on the ground for more than a stay of very brief duration. At the same time, they were taught how to walk with "climbers" on without injuring themselves or others. Elementary safety instructions stressed the necessity for using safety belts, gloves and other protective devices.

Pole-climbing practice was an important part of every day spent by trainees in the "classroom." They, literally, cut four poles to splinters, so that they had to be shaved down and, later, replaced by new ones. One thing the men learned by actual experience was that it is easier to climb with hooks than it is to descend. However, they mastered the knack and, by the time they were graduated—as the writer can attest—they were really adept pole climbers.

Later instruction included, among its high spots, the installation of high-level cross arms; guy wires; primary, secondary and neutral wiring; transformers (single and multiple unit) wire splicing; connection of wye and delta installations; street light circuit and lamp installations; transformer replacement without service interruption, by use of "mechanical jumper" or other means; use of "tong test"

meters for load checking; and the proper installation of equipment to avoid radio interference. An hour per day for one week was devoted to residence meter work—installation and checking of meter sockets.

During most of the classroom time devoted to the course, which ran for a total period of 12 weeks, the "laboratory" lines used were "dead." Toward the end of the course, they carried 110-115 volts. Nevertheless, during the whole schooling period, the lines were considered as energized and were handled exactly as if they were current-carrying.

At first, the circuits carried a hypothetical 4000 volts, and were worked with rubber gloves and other protective equipment. This included plain and cone-type rubber blankets, line hose, and hoods for covering energized installations in the immediate vicinity of the work area.

Later, the lines carried an imaginary 13,000 volts, the maximum handled by the distribution department—for which the training program was set up. When carrying the supposedly higher voltage, the lines were worked with "hot line" tools.

Contained in the "hot stick" part of the instruction program were a detailed explanation, demonstration and actual practice in the employment of the various remote control devices—lift and link sticks, "shot guns" and others—used for the handling and repair of high-voltage wires.

Integrated with the "hot stick" technique, taught by Mr. Smiley, was advanced safety instruction given by Mr. Rennie of the safety department. Incidentally, the major portion of the practical line-work teaching was done by Mr. Steele.

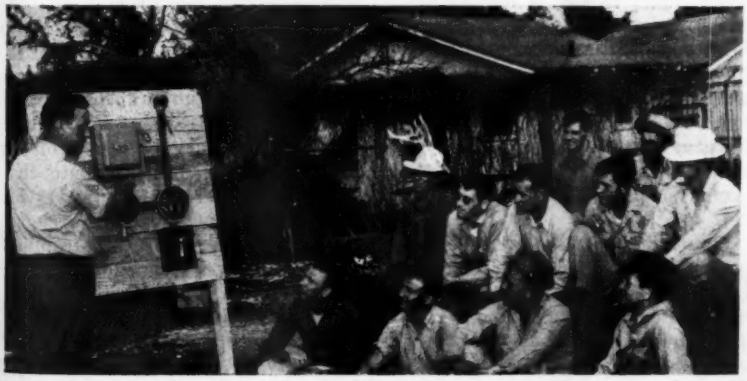
Especially emphasized in connection with the safety instruction were the importance of, and the method for carrying out "pole top resuscitation." Mr. Rennie pointed out that this means for resuscitating a current-shocked lineman can save up to 3 minutes, as compared with treatment on the ground, after he is brought down from the pole, and can better his recovery chance by as much as 50%.

J. H. White, FPL vice-president (white suit, back to camera) addresses the class. "Faculty" members in the group: left center, W. H. Steele; back to camera, R. O. Bushnell; extreme right, J. W. Beville.

In this resuscitation method, the rescuing lineman climbs the pole, shifts the shocked man's weight from the latter's safety belt to his own upper torso and applies artificial respiration. Usable, when the shocked man is in a pole area sufficiently unencumbered by wires and cross arms, so that the second man can work, this method gets results in an encouraging percentage of cases. Its chief advantage, of course, is the time-saving factor. Russian scientists, who have conducted broad experimentation with certain types of battle field casualties, such as explosion shock, claim that have 5 to 6 minutes in which to work, after "technical" death, before brain-cell disintegration begins. The principal points, and not the complete detail, of pole-top resuscitation have been outlined above.

"We do not expect," Mr. Bose points out, "to turn trainees, with little or no previous line work experience, into full-fledged linemen in 12 weeks of intensive training. But we do feel sure that we are making them into competent lineman apprentices in that length of time.

"Trainees have been given a good bit of theoretical background—more than they would be likely to learn in field training, alone—enough, in fact, to prepare them for foremen positions, at some future date. They have had, too, considerable practical training. What they need, from here on, is more and broader experience."



R. O. Bushnell (extreme left), distribution supervisor in charge of metering and "services," instructs class in correct setting of meters in sockets.

New Lights Thwart Death

Fifteen night-time pedestrian accidents in three years, five of them fatal, prompted Spokane, Wash., to install new street lighting over a three-block stretch that had become a traffic "hot spot." In the five and a half years since installation of the lights city officials report only two accidents, both minor ones.

Capitol Comment

An informal discussion of matters of timely interest among key men in the government as observed by the Business Press News Bureau.

A SPOTTY economy is in prospect. In some areas there will be unemployment and hardship. In certain sections there will be inflation. In others a better balanced situation is expected.

Greatest hardship will be felt by those first out of work because they will have to pay high prices for everything.

Unemployment is increasing markedly in certain areas while available manpower continues to be very inadequate in others. Leave and vacations are running out but April opened a new unemployment benefit year in various states.

Housing shortage does not inconvenience those who have comfortable quarters. In decided contrast others have to live under extremely undesirable conditions.

Unemployment Rises in Some Communities

Unemployment, while increasing, is not expected to spread or become general. It is likely, however, to plague a greater number of communities as the summer advances.

The backlog of orders in some of the heavier industries will be pulled down with increasing rapidity in areas where the manpower situation eases.

Some decline in agricultural prices is expected as soon as European harvests begin to come in. As the season advances, the pressure on certain American foodstuffs will not be so great.

These straws in the wind serve to remind that the time will come when deflation forces will gather momentum and that plans to cope with them should be ready before they attain too much headway. The economy is complex, with many conflicting forces in operation. Working out a program is no simple task and cannot be done on short notice. Warnings constantly are heard that the worse the inflation the more devastating will be the deflation.

Planning is an unpopular word but some persons still have the courage to use it. Everyone recognizes that it is better to have a plan than to be planless. The antonym of plan is chaos.

Restrictions on Unions May Follow Coal Strike

The coal strike gave an opportunity to bring home to members of Congress, through the press and otherwise, that anything Walter Reuther did during the automobile strike and anything John L. Lewis did during the coal strike was perfectly legal. It is impossible to predict when Congress will take effective final action, but indications are that limitations soon will be set after which many of the things done heretofore with impunity will be criminal in character.

Many Washington observers are at a loss to understand why labor organizations themselves do not recognize that they should voluntarily assume responsibility. Power cannot long be exercised without it. Unless labor unions themselves rise to their obligations to the public they are certain to counteract their efforts to be helpful to their members.

Labor is following the same path as did business when it opposed pure food laws; when it fought railroad regulation and the anti-trust statutes.

In the case of making business more responsible to the public it took a long time for opinion to build up to the striking point.

It is just as important for the United States to find a way of preventing strikes as it is for the nations of the world to devise machinery that will prevent the use of the tooth and claw method of settling international disputes. Lack of machinery to handle management-labor disagreements is in glaring contrast with the position the country has taken in the international field.

Nations do not want restraints put upon them even if it is in the interests of their people. They have been forced to try a method of collective security by the pressure of public opinion. The same force, sooner or later, will require some tribunal or series of tribunals which will settle industrial strife. Progress in that direction will be made at this session of Congress.

British Loan Is Seen As Stimulant To Trade

Approval of the British loan by the Senate is an essential third step toward world peace. The Bretton Woods agreement was the first step. The second was approval of the United Nations.

Attainment of these ends has been halting but gradually this nation is assuming the lead in world reconstruction. The United States finally has become of age. England now is in a position to extend powerful aid in rehabilitating the economy of the world.

Credits for foreign governments must be extended with the idea of helping the country not to need loans. This is much more important than the amount of the collateral to be required.

If a loan is made to Russia for machine tools there should be a requirement that the kind of tools be furnished that will create goods that are needed in the United States or in areas from which triangular trade will develop. Our interest in advancing credits is to increase the foreign country's capacity to export. Those exports also must be of a character that will be of direct or indirect value to us.

Business Interested in Food Relief Program

Feeding hungry people is important to business. The dead are not good customers. The undernourished and the starving are not good customers. More than that, hungry people are lawless and have little time or inclination for constructive things. Food is more essential than soldiery when it comes to the maintenance of order.

Communism is being used as a bogey man in the world situation. Capitalism does face a fight but it will demonstrate its effectiveness, all peoples gravitate irresistibly to the most successful system.

Countries with the capitalistic system should have no great difficulty in demonstrating that they take best care of their people. If the people of the United States can demonstrate that the free enterprise system makes for comfortable living standards even for those in the lower ranges of capability, the trend in Europe away from that system soon will reverse itself.

The most important thing in the world at the moment is to bring about prosperity. Regardless of handicaps, business must strive to make it a reality.

Contractor: I hear you're having a hard time with your new housing development. I suppose wiring is going to take a beating.

Builder: No – I don't think so. Cutting the wiring to the absolute minimum won't save enough to make it worth while. I have a reputation for building up-to-date homes, you know, not houses that are obsolete before the paint is dry. I want to protect that reputation.

Contractor: You mean to say that you will insist on a real adequate wiring job even in your low-cost houses?

Builder: I sure will. In my low-cost houses I'll have to omit some of the extras that people want. But small home owners use just as much electricity as people who live in large homes – even more maybe. And I sure won't leave out anything as essential as a sound wiring system.

Contractor: I'm real glad you feel that way. And I'm sure that good wiring will not only help to sell your houses, but will keep the owners satisfied as long as they live in them. That's a selling idea I'm going to start pushing right now.

P.S. Why not ask *your* G-E representative how you can benefit from the promotion of adequate wiring in residential, industrial, and other buildings. Or you may want to write for information to Section AW661-16, Appliance and Merchandise Department, General Electric Co., Bridgeport, Conn.

GENERAL ELECTRIC

ADEQUATE WIRING — THE KEY TO THE HOME OF TOMORROW — SERVES AND SAVES

Regular Demonstrations Improve Sales Technique

EVERY WORKDAY morning at 8:45 the appliance salesmen of Foley Brothers, Houston, Texas, department store, gather for sales school in a semi-charged atmosphere of expectancy.

Every salesman knows that before the 45-minute session is over, some salesman will be called upon to demonstrate some appliance.

But none of these salesmen knows who will get the assignment that morning. Nor does any of them know what appliance will be demonstrated.

At the proper time Walter O. Cuevas, appliance manager, will poke a forefinger in the direction of the chosen salesman and say:

"You, Mr. Wilson, let's see you demonstrate the ironer for us this morning."

Whereupon the sales crew gathers around, like wolves around fresh meat and there is much mental licking of chops, for if the demonstrator stumbles over any little detail, he gets a terrific panning.

He must know that ironer completely. He must have the poise and self-assurance necessary to convince the world's hardest critics — his fellow salesmen. He must be prepared to answer embarrassing questions that might be invented especially for the occasion.

As a result of this procedure, Foley Brothers' appliance salesmen make it a practice to know their merchandise. Especially do they make it a practice if they have the misfortune to be caught unprepared at one such session.

"Just one mis-step in front of that crowd," comments Mr. Cuevas, "and a salesman gets such a going-over that he won't risk the embarrassment of being caught unprepared again.

"That procedure keeps them on their toes. They make every effort to know every product we sell from top to bottom and even backwards. None of them want to be less informed about our products than the next man. And it creates a rivalry that is good for morale.

"Naturally, we don't call on a new man for such a demonstration without giving him plenty of opportunity to learn the products. Nor do we call on any salesman to demonstrate a new product, something he has never seen before. The first demonstration of a new product is conducted by me or by Mr. Watkins, assistant manager.

"But after that first demonstration and a reasonable lapse of time, every salesman knows he had best be on his guard."

The theory back of this rough-and-ready school of salesmanship, as Mr. Cuevas explains it, is derived from that bewhiskered and proven fact—knowing the product is the most important factor in making the sale.

There are other devices for keeping salesmen on their toes at Foley Brothers. Demonstrations are not limited to the products Foley Brothers have for sale. Competitive products are brought in and the salesmen get a course on them, and in this respect it is obvious there is scarcely any limit to the extent that sales training may be carried.

Another exercise that keeps salesmen on their feet, actually, and on their toes mentally, is the weekly shopping tour. Once a week each salesman takes two hours off during the day and "shops" competition.

"They approach our competitors as if to buy," says Mr. Cuevas. "They

Special emphasis is placed on the morning sales training schools of the appliance department staff of Foley Brothers, of Houston, Texas. And the highlight of each of these sessions is the sales demonstration which any salesman may be called upon to present before his fellow salesmen. In the picture, left to right, at a typical sales school, are: R. M. Leavell, W. F. Goeppienger, T. E. Carter, Janie Reagan, W. C. Wilson, W. L. Watkins, assistant manager, demonstrating ironer. W. F. Babcock, C. W. Lee, R. C. Nix, and Walter O. Cuevas, manager of the department.

MITCHELL brings you

Rad-i-Air

the first complete line of GERMICIDAL EQUIPMENT

...protects humans and animals against airborne infections ...protects products against contamination and spoilage

Wherever people live, work or congregate indoors . . , wherever animals are housed . . . wherever foods, beverages or medicines are processed, packaged, bottled or sold—there is vital need for the protective benefits of RAD-I-AIR Ultraviolet Germicidal Units! By shortwave irradiation of *maximum intensity* of the germicidal lamp, they kill deadly airborne bacteria, guard against spread of infectious diseases, suppress product contamination . . . with greatest effectiveness, economy and safety.

RAD-I-AIR units are advanced in design . . . sound in conception . . . scientifically perfected. They have already been tested and *proved* under severe operating conditions in homes, offices, stores, hospitals, factories, dairies, on farms, and elsewhere.

Now . . . after years of pioneering development . . . RAD-I-AIR unlocks the door to a huge, untapped market that offers you unlimited sales volume and substantial profits. For, never until now, has a *complete* line of correct, moderately priced, easily installed Germicidal equipment been available. Take the lead in your market—be first with RAD-I-AIR—and cash in on this golden opportunity!

You Get Complete, Abundant Sales Aids . . . Catalogs, Sales Manuals, Folders, Stuffers, Newspaper Mats . . . Everything to help you sell. Write for them now!

RAD-I-AIR U.R.C.
Models No. 921-15 and 921-30
For Personal Protection

RAD-I-AIR ALL-PURPOSE
Models No. 981-15 and 981-30
For Animal and Product Protection

RAD-I-AIR CONVEYOR LINE
Models No. 961-15 and 961-30
For Direct and Indirect Product Protection

RAD-I-AIR BARE LAMP
Model No. 931-15
For Protection of Meat and Meat Products

RAD-I-AIR ULTRAVIOLET PRODUCTS COMPANY, 1019 N. Madison Ave., Los Angeles 27, Calif.
Division of MITCHELL MANUFACTURING COMPANY, Chicago

Views of the spacious display floor which Foley Brothers, of Houston, Texas, will devote to appliances.

ask a lot of questions about the competitor's product and try to act like innocent buyers. Of course, the questions they ask sometimes give them away to the competitor's salesman, when he finds out what is going on, ends the conversation rather abruptly. At other times a competitive salesman will be friendly and helpful.

"However it turns out, shopping competition produces some good sales slants, which are discussed in our meetings. And sometimes — you'd be surprised—competitive shopping turns up something on our own product we have overlooked. Who was it said you can get too close to the forest to see the trees?"

Mr. Cuevas is a firm believer in this type of sales training for two reasons. First, it is far superior to the book type of training and, second, some manufacturers have not had time to produce substantial sales helps or training.

"Some of them just give you a catalog, say 'there it is, sell it!' So you have to train salesmen."

This kind of training, he contends, will make salesmen appliance-minded and money-minded when working on a weekly guaranteed salary plus commission.

In April, Foley Brothers was using seven salesmen, all of them new to the business with one exception, a man with previous experience.

"Too many of the old-time appliance salesmen knew it all," says Mr. Cuevas, "and said they'd do no more 'bird-dogging,' no more bell ringing. I remember one salesman in my experience. He made $300 the first eight days of the month and that was the last I saw of him that month."

In April, the seven salesmen were all working on the floor, taking names and registering customers — without deposits — for appliances desired. As receipts permitted deliveries, a letter went out to the fortunate customer, with notification that the appliance ordered was available. Out of receipts, however, Foley Brothers set aside one-third of all items for veterans.

Otherwise, all merchandise was allotted equally among salesmen. Salesmen were on their honor to divide the merchandise equally among themselves and this was checked by Mr. Cuevas through a daily list of sales. If one salesman forged ahead of the others, he was required to pass on to his mates enough sales to balance the volume.

Only in the case of a man entirely new to the business was there an exception. In his first month, a new man was allowed a volume of sales equal to 50 per cent of the general average. This ruling was on the theory that, in the process of learning, and with demand far in excess of supply, he was not entitled to more.

Eventually, Foley Brothers will have no less than 30 salesmen, with ten of them on the floor every third day. However, each salesman will have a quota and each must make his quota to be entitled to a floor day.

Mr. Cuevas says his force will make a special effort on air conditioning equipment sales, because Houston reacts favorably to the air cooling argument.

"In some lines we are going to need good salesmen and a number of them in the immediate future," he believes, "for in my opinion by the month of August, we will have air conditioning units, ironers and radios running out of our ears."

Foley Brothers' appliance department is on the sixth floor of the present building, but that does not deter prospects, who keep the floor staff busy.

In a new and completely modern building now being constructed, Mr. Cuevas' department will be two floors nearer the ground level. He does not think it will be any problem for a department store to draw prospects even in a normal market, for Foley Brothers is well located.

"We will have big elevators, escalators and spot displays to attract prospects to the fourth floor," he adds, "and there is still that factor of demand."

Pocket radios, designed to fit vest pockets or purses, are in production. They use miniature tubes developed first for radar, the proximity fuse and other important war applications.

Only a miniature,

but why not ALCOA ALUMINUM in the real towers?

Built of Alcoa Aluminum, a pair of these towers graced the Northwest Power Pool's exhibit (State of Washington) at the recent Metal Show

Alcoa Aluminum structural shapes are being used for substations and switchyard structures, as crossarms on H-frame structures. Being highly resistant to corrosion, the aluminum needs no protective painting. That expense, costly shutdowns, and this maintenance hazard are all avoided.

Aluminum structural shapes are light in weight, easy to transport in rough country, easy to erect. Why couldn't Alcoa Aluminum structural shapes be used for transmission line towers or for certain parts?

Alcoa Aluminum structural shapes are available for prompt shipment. Alcoa has the data your engineers will need to include aluminum in your structures. For [illegible] and prices, call the nearest Alcoa office, or write:

ALUMINUM COMPANY OF AMERICA
2164 Gulf Building, Pittsburgh 19, Penna.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM

"Help-Yourself" Laundry Brings Traffic, Prospects

To CREATE additional "foot traffic" in the Schorr Appliance Company, Shreveport, La., and to assist customers who are unable to obtain washing machines, Edward I. Schorr, owner, has started a "Help-Yourself" laundry in the rear of his business.

The laundry room is so located that users of this service must pass through the entire store, thus exposing them to all of Mr. Schorr's merchandise. He has nine washing machines set up in a room, 18 by 36 feet. A porter carries the clothes to and from cars, instructs the women in use of the machines, and assists in the washing.

The name and address of each machine user is kept for a prospect list. With 800 on his waiting list for washing machines, Mr. Schorr began the laundry to bridge the gap until a quantity of machines are available. It also serves as a demonstrating and proving ground for his product.

"A lot of customers on my waiting list aren't sold on the machine as the best one to buy," says Mr. Schorr. "The help-yourself laundry demonstrates to them what it will do."

He estimates that up to 300 persons come into his store weekly for the laundry service who wouldn't otherwise visit his place of business. While waiting for their clothes, he discusses washing machines with his customers.

The store charges 60 cents an hour for the service, furnishing everything except the soap. Aside from introducing his product to regular washing machine users, 10 per cent of Mr. Schorr's customers wash their clothes electrically for the first time.

Other methods to stimulate business are employed by the Schorr Appliance Company, which is less than a year old. A team is sponsored at the local bowling alley, with each member wearing a uniform bearing the company's name on the back. Newspaper write-ups of the team's activities give additional publicity to the concern.

Aside from classified advertising, which he rates highly, Mr. Schorr writes a chatty, down-to-earth column advertisement for the newspaper entitled, "Schorr's Squawks." In it he discusses the appliance situation as though talking to a person across the table. It was through his column that he created interest in the laundry idea a month before beginning operation.

"I want people to use my machines," he says, "and the help-yourself laundry is a step in the right direction."

Edward I. Schorr, owner of the Schorr Appliance Company, Shreveport, La., discusses his washing machines with two customers of his Help-Yourself laundry. By making regular rounds of the nine washing machines used by housewives at 60 cents an hour, he secures many orders and prospects for his product.

Schorr's Squawks

Hi Folks:

It looks like washing machines are going to be scarce all this year. Thinking about it one night I got this brainstorm:

To help people who need a washer and can't get one, we will take nine (9) brand new DEXTERS and sit them back in our store for people to use. That's right, a Help-Yourself Laundry. We furnish all the hot and cold water you need, you pay by the hour (don't know how much yet). Every machine will be sterilized after each use. Will have a man to help you in and out of your car with your wash. Hope to get started about the 26th.

Do you like the idea? Let us know. So Long.

SCHORR APPLIANCE CO.

Your Leading Appliance Store
1157 Texas Phone 4532

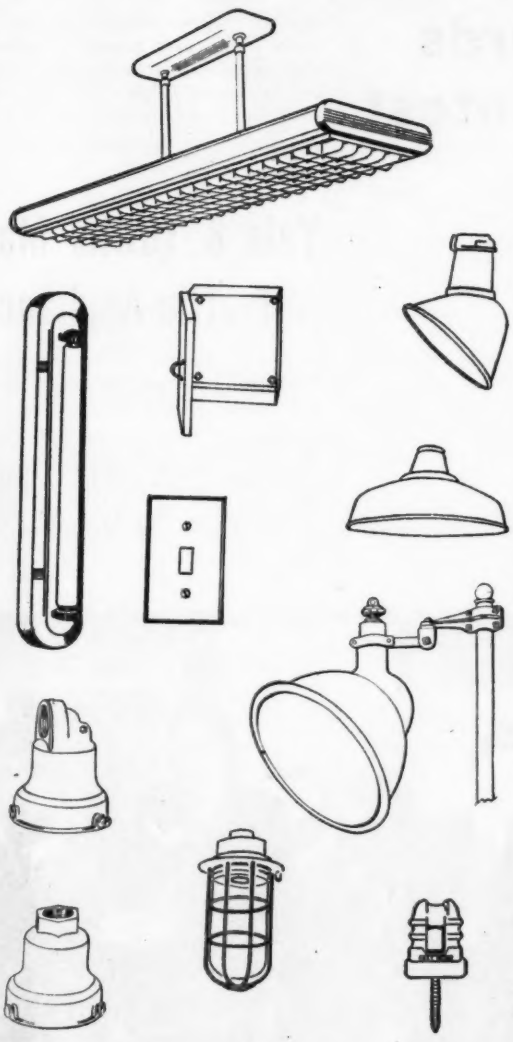
Homey, informal advertisements such as this are getting good results.

How to Put Punch In Your Advertising

THE MAIN BLOCK of words in an advertisement, usually called the body copy or selling copy, is its most essential part. Layout, headline, drawings and photographs, are only window dressing to draw the eye into the copy. Copy alone *sells*. Writing selling copy is not an art, requiring special talent, any more than the ability to sell a radio tube is an art, but it is a craft, following certain rules which have been proven by experience.

(Continued on page 64)

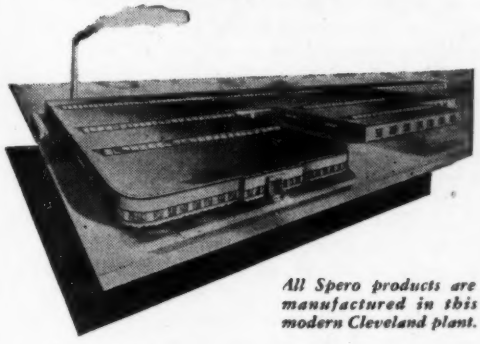
SPERO



Reconversion at The Spero Plant is now completed, and full-scale production of our regular peacetime lines has been resumed.

Spero Products are distributed only through verified wholesalers.

...5 LINES of Products from one dependable source



All Spero products are manufactured in this modern Cleveland plant.

Fluorescent Luminaires

for commercial, industrial and residential installation. Of special interest is the new Spero MSB (minimum surface brightness) glass-shielded line, bringing new architectural beauty to decorative lighting.

Reflectors

Shallow and dome type, one-piece seamless construction—keyless and pull chain styles. Wide variety of types and sizes for 75 to 750 W lamps.

Floodlights

Open types and outdoor weatherproof types fitted with prismatic lens. Finished in "Duralum". Sizes for lamps from 150 to 1500 W. Also Yard Lights and Cargo Lights.

Vaporproof Units

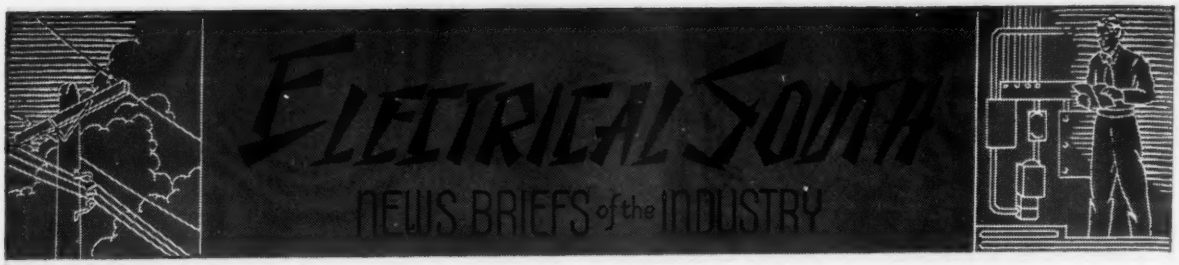
Pendant or bracket types—available for 3" and 4" outlet box mounting, also "X" types. With or without wire guard. Reflectors available. Lamp sizes 50 to 300 W.

Construction Equipment

Outlet boxes, Switch Plates, Zinc Diecast Sockets, Porcelain Wire-holders (lag or machine screw type) and Multiple-Point House Brackets. Made of quality materials to Spero's high design standards.

Write for complete information

THE SPERO ELECTRIC CORPORATION
18222 LANKEN AVE. ★ CLEVELAND, OHIO



Southerners Get Awards In Lamp Design Contest

THE FOUR top-ranking contestants in the second annual Sylvania Electric Products, Inc., commercial fluorescent fixture design contest have been presented with cash prizes totalling $1,100 by Robert H. Bishop, director of sales for the company. Inscribed plaques were also given to them by Stuart Goodwillie, manager of central station sales. Eighteen others were named as $50 meritorious winners during the presentation made in the Skyway Suite of the Hoted Stevens, Chicago.

For his design of an unusual fixture employing four of the Sylvania Electric fluorescent long slim type of lamps, Clarence J. Berry, of the Consolidated Gas, Electric Light and Power Company of Baltimore, won the $500 first prize. Second place and $300 was given to E. M. Prims, of the Public Service Company of Northern Illinois, Evanston, Ill. Carter Lewis, of the St. Louis Union Electric Company of Missouri, and H. Stuart Thomas, of the Mississippi Power and Light Company, Greenville, Miss., won third and fourth places, respectively, with cash priezs of $200 and $100.

In citing the prize-wining entrants, Mr. Bishop said, "Every new fixture idea and design adds impetus to the drive for improving lighting conditions in commercial establishments, and this year's group of fixtures are of such unusually high merit that the fixture manufacturer now knows the country's businessmen are becoming lighting conscious."

Design requirements of the contest called for drawings and specifications of commercial type fixtures using four of the newer style 96" long slim fluorescent lamps, and suitable for illuminating the main floor area of a department store.

Mr. Berry's first prize-winning design combined the long slim lamps into a fixture which delivers direct and indirect light, using a one-piece sine-curved reflector. The bottom of the fixture is shielded by an easily removable continuous louver to conceal the direct light from view.

Mr. Prims' second place entry embodied simplicity and strength in a rectangular and streamlined fixture with removable end cover plates for single or continuous row mounting. The third place fixture, conceived by Mr. Lewis, was designed to deliver most of the light downward in the zero to forty-five degree zone and employs a specular parabolic reflector. Fourth-placing fixture by Mr. Thomas was hexagonally shaped and casts light not only from the bottom and side but from the end plates as well.

Yale & Towne Make Traffic Appliances

THE YALE & TOWNE Manufacturing Company will enter the field of electric home appliances as a first step in its postwar program of expansion in the consumer products field, it was announced in New York recently by W. Gibson Carey, Jr., president.

This broadening of the company's

The four top-ranking contestants in the Second Annual Commercial Fluorescent Fixture Design Competition conducted by Sylvania Electric Products, Inc., are congratulated by Robert R. Bishop, director of sales, and Stuart Goodwillie, manager of central station sales, during the presentation of awards. Pictured here (left to right) are: E. M. Prims, of the Public Service Company of Northern Illinois, Evanston, Illinois; Mr. Goodwillie; H. Stuart Thomas, Mississippi Power and Light Company, Greenville, Mississippi; Carter Lewis, St. Louis Union Electric Company of Missouri; Clarence J. Berry, Consolidated Gas, Electric Light and Power Company of Baltimore, Maryland; and Mr. Bishop. Mr. Berry won first prize of $500; second prize of $300 went to Mr. Prims; Mr. Lewis won third prize of $200; and Mr. Thomas won fourth prize of $100.

Chelsea Ventilating Coolers for Home, Office, Factory or Store!

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blowers
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TYPE ED STREAMLINED ATTIC FAN:

**ut, rolled-
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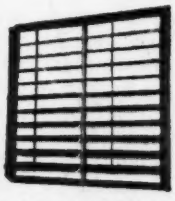
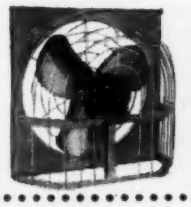
. Moving parts are rubber
cushioned.**

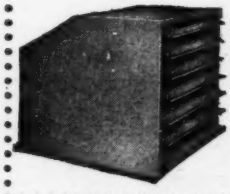
INVESTIGATE THESE WIDELY-USED CHELSEA VENTILATING UNITS



Type LWL Automatic Louvers: For general ventilation installations. Protects fan when not in use. Aluminum leaves pivoted in machined brass to reduce friction; tie rods cadmium plated bushings. Larger units dual to eliminate twisting of leaves.

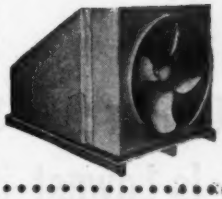


Type AA Utility Fan: For cold storage, meat packer and freezer applications. Totally enclosed ball bearing motor with both front and rear guards. Capacity: AA20 — 3000 CFM; type AA24—4800 CFM. Fan speed—1100 rpm.



Type PH Penthouse Roof Ventilator: For roof ventilation. Operates against static pressures using the IND type industrial fan housed in steel penthouse with automatic shutters. Completely assembled—ready for installation

Type P and MC Pedestal Fans: For shops, offices, stores, and factories. Rugged construction with steel die-stamped blades. Motor and fan shaft ball bearings. All parts protected against rust. Available in a wide range of sizes.



Type EU Package Attic Fan Unit: For cooling homes, churches, hotels, hospitals, schools, etc. New streamlined venturi orifice delivers greater air volume. ASH and VE method certified ratings. Efficient, low current consumption motors.

CHELSEA PRODUCTS

1206 GROVE STREET, IRVINGTON, NEW JERSEY

activities will continue an old company policy of diversification of its manufacturing program. Originator of the world famous pin tumbler cylinder lock 78 years ago in its Stamford Division, Yale & Towne subsequently added builders' hardware, door closers, handchain and electric hoists, handlift and electric material handling trucks, pumps, precision scales, and other industrial products. These are produced in its seven divisions in the United States, Canada, and England.

Mr. Carey also announced the appointment of Anthony B. Cassedy as director of appliance sales for Yale & Towne. For the past three years Mr. Cassedy has been assistant to the president for marketing and is largely responsible for developing Yale's new consumer products marketing program.

The traffic appliances will be manufactured in Yale & Towne's Buffalo plant.

The first appliance to be offered by Yale & Towne is a patented "Tip-Toe" iron, an electric, automatic iron having a dual sole plate which enables the user, by tilting the handle forward, to use the toe section for ironing pleats, ruffles, folds and other "hard-to-get-at" places on garments and fancy work.

Mr. Cassedy is establishing a national sales headquarters for Yale electric appliances in the Empire State Building. He will organize a national sales force to merchandise the traffic appliances. A selected list of jobbers will be appointed throughout the United States. Sales to retailers will be made only through franchised jobbers.

The electric appliance program of Yale & Towne is well past the development stage, Mr. Carey said. It is expected that a few test territories will be opened during early fall when irons will first be shipped from the Buffalo plant.

Copper Bar Supply Is Lowest in Years

THE SUPPLY of copper wire bars for June is expected to be the lowest for several years, Civilian Production Administration officials informed the Copper Wire and Cable Mill Industry Advisory Committee at its meeting May 22.

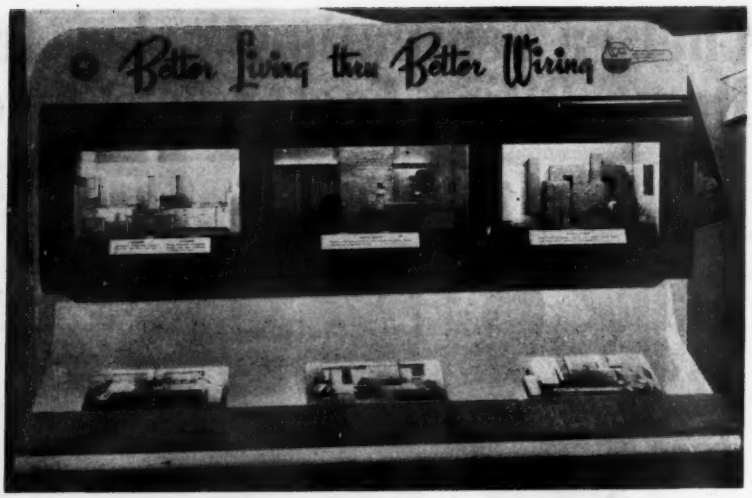
While the requirements of the wire mill industry for these bars are currently running at between 50,000 and 60,000 tons a month, only about 10,000 tons are now expected to be available in June. This is a continuation of the drop which began in the fall as the result of strikes in wire rod mills and has been accelerated since by strikes in other operations of the copper industry, including a mid-winter copper mine strike.

In April about 31,000 tons of copper bars were available; in May, only 17,000. Consequently, the production of rod for copper wire in June will be somewhere around 20 per cent of requirements. manufacturers agreed, unless the refinery strike is settled immediately.

Serious Effect on Production

Production of electric wiring for housing, as well as fractional horsepower motors and many kinds of consumer goods, will be cut down in almost direct proportion to the amount of copper wire produced unless the output of the wire mill industry is quickly brought back to its peak, manufacturers warned. Among the consumer goods affected by the drying up of the supply of copper wire bars are washing machines, vacuum cleaners, radios, electric fans and irons.

Housing is affected by the shortage of copper magnet wire for electrical fixtures; house wire and metallic and non-metallic sheath cable; and wiring for motors for oil burners and refrigerators.



BETTER LIVING THROUGH BETTER WIRING—The advantages of better wiring for New Orleans homes are plugged in this large display at New Orleans Public Service, Inc. Situated on the street floor, the display attracts a great number of those entering the Crescent City utility company's offices. The three alcoves at the top of the exhibit contain actual models of a modern kitchen and laundry, living room, and utility room. Superimposed on the photographs underneath each model are the electrical outlets and wire circuits necessary for the modern equipment.

Handbook Discusses Farm Wiring Needs

IF THE FARMER is to save labor, cut operating costs, improve his products, and enjoy city conveniences with the new electric appliances soon to be available, the wiring system of his farm must be adequate, economical and easily expanded, states the "Handbook of Farmstead Wiring Design," a 64-page booklet just published by the Industry Committee on Interior Wiring Design, Room 2650, 420 Lexington Avenue, New York 17, N. Y. This handbook, the first of its type to be published and containing entirely new and original material, represents over a year's planning and preparation by experts of ten leading trade associations and technical societies.

The danger a farmer faces when he provides electric light for his farmstead and installs an electric water system, is that he will fail to provide sufficient wiring capacity to allow for more productive electrical equipment that will almost certainly be added in the future. With wiring of capacity to carry voltage for water and lights only, he faces the problem of installing new wiring, should he later desire an electric milker, feed grinder or poultry equipment.

As the handbook states, "Provision of adequate capacity when the

HOW YOU CAN "Hang the Sky" TO HELP THEM SEE BETTER

Over-ALL Lighting

by Wakefield

It's brand new— The STAR

Here's the answer for many of your needs. Provides all the advantages of both fluorescent and indirect light plus simple, sturdy construction and easy maintenance. Checked and improved by pre-testing. Unusually simple to handle and clean—just slide out Plaskon reflector section. No need to take unit apart. Ideal for office, drafting room or school. Plan for it on your next job.

It's new — THE WAKEFIELD STAR

BOOST YOUR SALES with a new approach to office lighting

Over-ALL Lighting by Wakefield provides a new method for lighting office interiors and for lighting drafting rooms and schools. A method that makes for easier seeing *and for more business for you!*

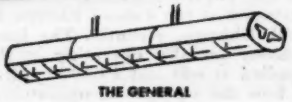
Designed to protect eyes against strain, the new Wakefield Over-ALL Lighting method spreads soft pleasing light *over all.* Your customers will like it because this new system is based on lighting results which mean comfort plus efficiency.

And especially important to you—Wakefield equipment for Over-ALL lighting has been designed to simplify your work . . . through easy installation, easy maintenance and long-lasting service *in addition to top lighting performance.*

Ask your Wakefield representative to tell you how Over-ALL Lighting can work for you. The F. W. Wakefield Brass Company, Vermilion, Ohio.

Wakefield

LIGHTING EQUIPMENT FOR OFFICE, SCHOOL AND DRAFTING ROOM



THE GENERAL

THE GRENADIER

THE COMMODORE

THE DIPLOMAT

exterior distribution system is first installed usually will cost but a fraction of the expense of making changes at a later date. Labor cost is about the same, regardless of size of service and overhead feeders, therefore it is most advantageous to install large-size wire and service equipment at the start."

With graphic illustrations and text easily understood by men with no technical experience, the farm handbook discusses practically every phase of electric service in the farmer's daily work. The experience of many farmers has been analyzed, to obtain authoritative background for the committee's recommendations for interior wiring of farm buildings and the farm distribution system.

In the section on dairy structures, floor plans are shown for the dairy barn, loafing barn, box stalls and milk house. Floor plans of poultry buildings include the poultry laying house, the brooder house, and arrangements for morning and evening lighting. Beef cattle barns, horse stables, sheep barns, and lambing sheds, hog and farrowing houses are also illustrated.

In the section on field crops, the feed grinding room, storage room, hayloft, and silo are discussed from the viewpoint of efficient wiring. Tobacco and potato growers will find profitable wiring suggestions. Fruit and vegetable crops are also covered.

Floor plans show the best locations for every type of switch and outlet. Such reminders as placing switches above the reach of livestock, and mapping outlets for expansions of stock or field crops are emphasized—reminders that only too often have been overlooked when the wiring is actually being installed.

The handbook is not an installation manuel. It is intended to show how to plan wiring systems for adequacy, efficiency, and ease of future expansion.

The committee also announces that over a quarter of a million copies of the "Handbook of Residential Wiring Design," on wiring of single family dwellings, and a companion piece to the farmstead wiring handbook, have been printed since January. These books have been sold mainly to utilities, contractors, dealers, etc., for distribution to their customers. "Handbook of Farmstead Wiring Design," judging from advance orders, will come close to this record.

Atomic Power Prospects Discussed at EEI Meet

WHETHER atomic energy can replace coal and water as the nation's principal source of electric power in the near future, and the possibility of new developments in electric house heating revolutionizing residential use of electricity throughout the country, are two of the important subjects which were considered at the annual meeting of Edison Electric Institute, at the Waldorf-Astoria Hotel, New York City, from June 3rd through the 5th.

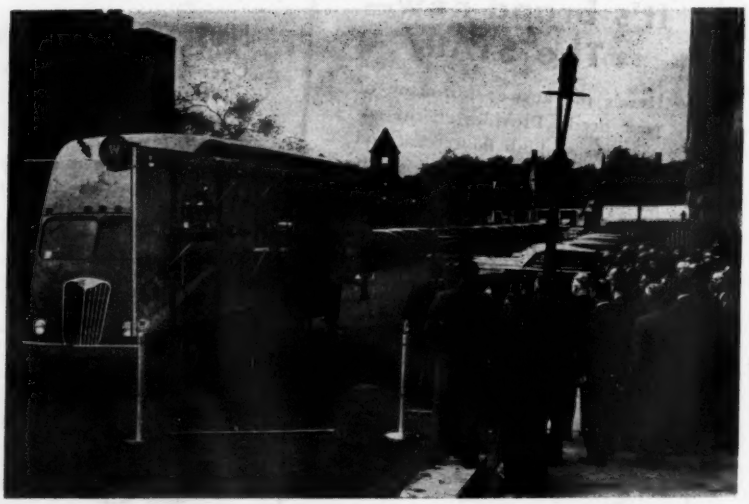
C. W. Kellogg, Institute president, opened the meeting with a review of the utility industry's record during 1945, and a considered forecast of what the next few years are likely to bring.

No less than four authoritative speakers examined atomic power and its possible uses in public service. They were Dr. Kenneth H. Kingdon and Dr. C. G. Suits of General Electric Company's Research Laboratory; Harry A. Winne, G-E vice-president in charge of engineering policy, and Dr. John C. Parker, vice-president, Consolidated Edison Company of New York.

The electric house heating system, now in limited production and making its commercial bow this year, was discussed from the viewpoint of its possible use in two widely differing climatic areas of the United States. J. H. Polhemus, president, Portland General Electric Co., Portland, Ore., and J. M. Barry, vice-president, Alabama Power Company, Birmingham, Ala., were the speakers.

The utility industry's plans to add 600,000 farmers to its lines within the next few years, if critical shortages of poles and other materials ease up, were outlined by Grover C. Neff, president, Wisconsin Power & Light Co., Madison, Wisconsin.

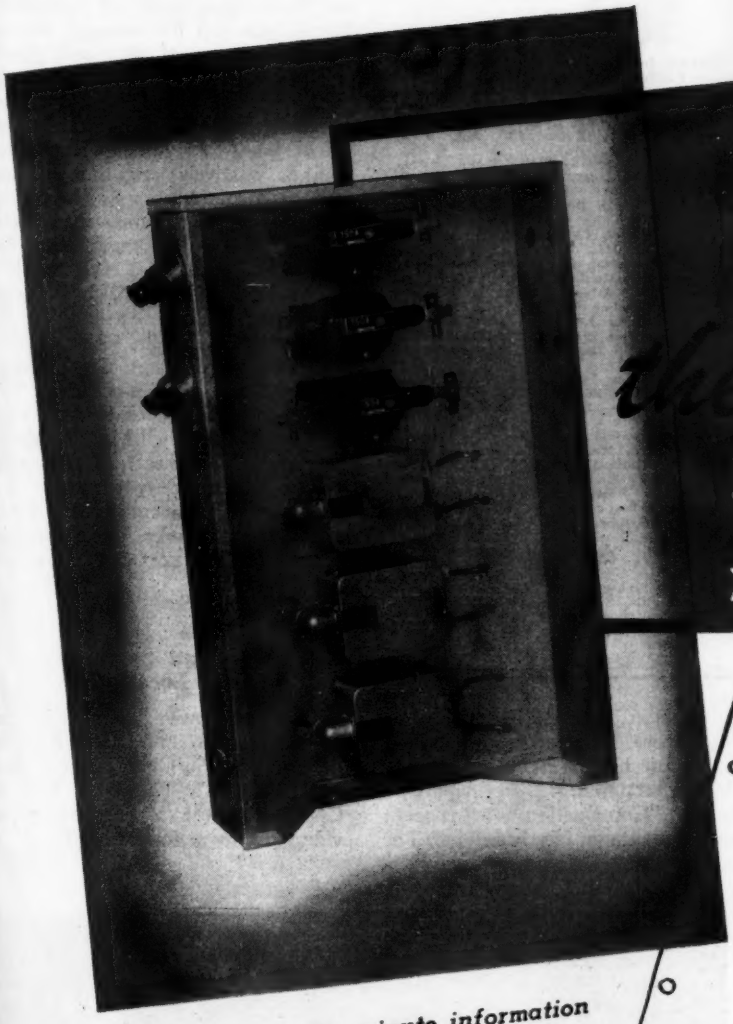
Other important subjects, including demonstrations of how American industry can produce cheaper, faster and better by means of electrical processes developed during the war, were also included on the three-day program.



DISTRIBUTION DEMONSTRATION TRUCK PREVIEWED — Before starting on a year's tour of the electrical utilities throughout the United States, this truck was demonstrated at the Edison Electric Institute meeting at the Edgewater Beach Hotel, Chicago, recently. The latest Westinghouse distribution equipment is shown actually operating at 2400 volts under live-line conditions. Faults applied at will and 100,000 volt lightning strokes give a graphic picture of how the equipment operates during storms.

Creosote Supply Short Of Pole Requirements

POLE REQUIREMENTS of the nation have tripled in the face of diminished supplies of creosote preservative. R.E.A. needs alone in 1946 will equal the wood-preserving industry's average pole output in a normal year. These facts were presented at the 42nd annual meeting of the American Wood-



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WECO ATLANTA

MANUFACTURERS OF SWITCHBOARDS • PANEL BOARDS • SERVICE EQUIPMENT • METAL ENCLOSURES

Preservers' Association held in Cincinnati recently.

Present construction plans of Rural Electrification Administration cooperatives call for three million poles yearly through 1950, E. R. Smith, chief, pole requirements staff, R.E.A., Washington, D. C., reported. Wood-preserving companies produced 2,993,823 poles in 1944, the latest year for which official figures are available. Association members point out that normal commercial needs have doubled due to a backlog of maintenance and long-planned expansion programs.

Unless coal-tar creosote can be obtained from Great Britain, wood-preserving operations will be hampered by a shortage of at least 20 million gallons of creosote in 1946, J. F. Linthicum, president of the American Lumber and Treating Company, Chicago, announced.

"Users are operating on a hand-to-mouth basis and any interruption of shipments from distilleries because of strikes in the steel or coal industries, or for any other reason, causes immediate shutdown threatening the loss of large inventories of forest products in storage for seasoning. An adequate supply is absolutely essential as there is no comparable substitute for creosote in the preservation of poles, ties, and marine piling," he said.

DATES AHEAD

National

American Institute of Electrical Engineers, Summer Convention, Detroit, Mich. June 24-28, 1946.

Northwestern Section IAEI, Boise Hotel, Boise, Idaho. Sept. 23, 24, 25, 1946. W. L. Gaffney, Secretary, Room 402, City Hall, Tacoma 2, Wash.

Southwestern Section IAEI, Hotel Sacramento, Sacramento, Calif. Sept. 30, Oct. 1 and 2, 1946. H. L. Gerber, Secretary, Room 205, City Hall, San Francisco, Calif.

National Electronics Conference, Inc. Edgewater Beach Hotel, Chicago 14, Illinois. October 3, 4, 5, 1946.

National Electrical Contractors Association. 1946 Annual Meeting. Ritz Carlton Hotel, on the Boardwalk, Atlantic City, New Jersey. Convention, October 15, 16, 17, 1946.

Western Section IAEI, Gibson Hotel, Cincinnati, Ohio. Oct. 21, 22, 23, 1946. F. H. Moore. Secretary, 320 N. Meridian St., Indianapolis 9, Ind.

Eastern Section IAEI, Mark Twain Hotel, Elmira, N. Y. Oct. 28, 29, 30, 1946. F. N. M. Squires, Secretary, 85 John St., New York 7, New York.

National Electrical Manufacturers Association, Annual Meeting, Marlboro-Blenheim and Claridge Hotels, Atlantic City, N. J. Week of October 28, 1946.

All-Industry Refrigeration and Air Conditioning Exposition. Cleveland Auditorium. Cleveland, Ohio. October 29-November 1, 1946.

Southern

Southern Section IAEI, George Vanderbilt Hotel, Asheville, N. C. Oct. 14, 15, 16, 1946. A. M. Miller, Secretary, 910 West 30th St., Richmond 24, Va.

Electric Heating Is Live Wire Subject

ELECTRICAL HEATING and the increasing calls for it was a live-wire subject to which one entire afternoon's discussion was devoted during the annual convention of the Tennessee Electrical Contractors' Association, held at Whittle Springs Hotel, Knoxville, May 20-21.

Three speakers discussed the various phases of electrical space heating: Buford H. Martin, TVA Division of Electrical Development; and Thomas J. Mellon and J. C. Beckett, vice president and chief engineer, respectively, of the Wesix Heater Co., of San Francisco.

Among others on the two-days' program of the convention were D. B. Clayton, vice president of the NECA, Third Division, Birmingham, Ala.; Laurence W. Davis, general manager, NECA, Washington, D. C.; G. D. Munger, chief of the Division of Electrical Development, TVA, who was speaker at a banquet, when Clyde Carpenter, commercial manager of Knoxville Utilities Board, was toastmaster; and Hal Horton, district lighting engineer, General Electric Lamp Department, Atlanta.

"Electric heating has come of age," Mr. Beckett told the group of contractors. "Construction and design of equipment is now clearly defined. The guesswork has been taken out and we can tell in advance the capacity required, the results to be expected and the estimated cost of operation. The skeptic can be answered directly with volumes of data and proof that electric space heating offers greater comfort at a cost comparable with other methods of heating. It has taken twenty-odd years to reach this point, a relatively long time due in part to a number of early, poorly thought-out installations, inadequate wiring, and lack of consideration for house insulation."

J. N. Stansell, of Nashville, was elected president, succeeding W. G. Hoffman, of Knoxville. Other officers are: first vice-president, C. O. Davis, Memphis; second vice-president, W. A. Jewell, Chattanooga; third vice-president, R. Mitchell Murphy, Knoxville; and Phillip Sweet, Chattanooga, re-elected as secretary-treasurer.

The convention ended with a trip to the Great Smoky Mountains National Park. The next convention will be at Nashville.

Reddy Kilowatt Service Now in New Location

REDDY KILOWATT Service has announced that it is now located on the third floor of 50 Church Street, New York 7, N. Y. The move from 30 Church Street was necessary to provide more room for the staff.

New officers of the Tennessee Electrical Contractors Association are shown following their election at the convention held at Whittle Springs Hotel, Knoxville. Left to right: J. N. Stansell, of Nashville, new president; C. O. Davis, of Memphis, first vice-president; W. A. Jewell, of Chattanooga, second vice-president; R. Mitchell Murphy, of Knoxville, third vice-president; and Phillip Sweet, of Chattanooga, who was re-elected secretary-treasurer. Mr. Stansell succeeds W. G. Hoffman, of Knoxville.

DON'T TAKE CHANCES! THESE PRODUCTS PREVENT TROUBLE...

ESSEX WIRE... *There Is No Better Made!*

Essex makes the kind of wire every shop wants and needs — soft *MAGNET WIRE* with tough, high quality insulation — formvar, enamel or fabric — and PB300 *LEAD WIRE* — *the* lead wire for motor repair shops — flexible and easy to use.

Made to stand up under your baking varnish treatment without harm — incorporating every latest technical development to improve both wire and insulation—*ESSEX WIRE* meets the toughest requirements for top quality and service.

Shipment can be made from warehouse or factory stocks.

Send for Complete List and Prices

FIBERGLAS INSULATION MATERIALS *... Guarantee Dependable Jobs!*

FIBERGLAS* ELECTRICAL INSULATION

FIBERGLAS INSULATION prevents motor burnouts and failures — is not affected by moisture — will not burn on overloads or high heat — cannot be attacked by most acid or vapors — will stand up under tough use — takes abuse longer without failure — has great mechanical strength and high dielectric qualities — is thin, light and flexible — saves space and is easy to handle in tight spaces.

Use *FIBERGLAS* for all your best work — satisfy your most particular customers — make *all* your jobs safe against failures.

FIBERGLAS is carried in stock in tape, tubing, sleeving, cord, cloth and mica combinations.

Write For Samples and Prices

U-WEDJ * FIBRE ARMATURE WEDGES *... With the Perfect Shape!*

IWI "U" Shaped Fibre Slot Wedges — *U-Wedjes* — give you the best possible protection against electrical and mechanical troubles and failures.

Formed to fit the motor slot perfectly, *U-Wedjes* protect and hold windings firmly in place — won't turn over in the slot — slip over both sides of the slot cell insulation — and permit windings to be placed closer to the top of the slot.

U-Wedjes are made of the finest fish paper — are easy to handle and use — come in standard 48" lengths or 250 ft. bundles — and do a swell all-round job! Try *U-Wedjes!*

Write for Free Sample Set, Mounted, Ready to Use

*Trade Mark Reg. U. S. Pat. Off.

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Send for Your Copy of the IWI Blue Catalog.

Sharp Rate Reductions Announced by OG&E Co.

RATE REDUCTIONS effective July 1 in the amount of $832,952, in the states of Oklahoma and Arkansas, have been announced by George A. Davis, president, Oklahoma Gas and Electric Company. This includes the $211,551 reduction previously announced in the press as being applicable to municipalities for street lighting, water pumping, public buildings, and public schools.

These reductions were established after conferences between representatives of the company, led by W. B. Gesell, rate analyst, and the staffs of the Oklahoma Corporation Commission and the Arkansas Public Service Commission.

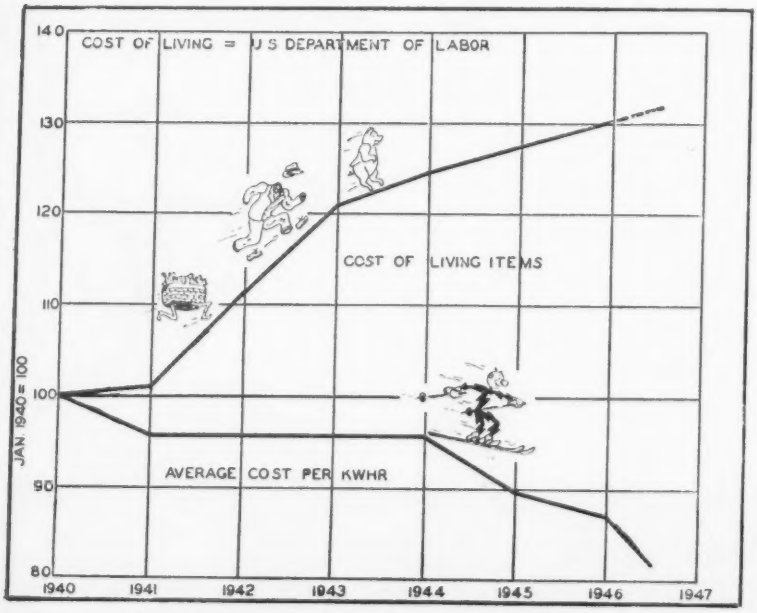
The savings resulting from recent company refinancing of securities, from changes in the federal income tax laws, and from continued efficient operation of the company have made possible this announcement of the largest rate reduction in the history of the company.

Of the $621,400 reduction just announced, the residential customers will benefit by approximately $292,000 per annum; the commercial customers will benefit by approximately $285,000; and the rural customers will benefit by approximately $39,500.

The 1946 rate reduction program plus the six reductions made since January 1940 amount to an annual saving for OG&E customers of $2,391,000, based on the usage at the time of each reduction. The present reduction exceeds those made in 1937 and 1930, the second and third largest reductions in the company's history, by $81,000 and $124,000 respectively.

These reductions are a result of constant efforts to generate, transmit and distribute electricity at lower costs and the passing of these reductions in cost to the consumer. Since 1940 the debentures, bonds and preferred stocks of the company have been replaced with lower interest bearing securities. This has reduced the fixed charges which must be earned and the savings have been passed on to users of the service.

While it is expected that war loads amounting to $750,000 will be lost in 1946, it is anticipated that the rapid growth in the number of new residential and commercial customers in the area served by the company, plus the increased load from new electrical appliances as they appear on the market, will to a large extent offset this loss.



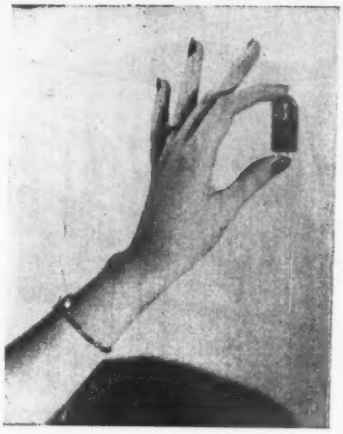
How O. G. & E. illustrates their rate trend.

Frigidaire Announces New Regional Setup

"IN ORDER TO better serve the 44 Frigidaire distributing organizations throughout the country, the Frigidaire Division, General Motors Corporation, has increased its regional sales territories from four to five, with regional headquarters in the respective territories. Formerly, headquarters for all except the Pacific Coast region and the new Southwestern region were located at the factory in Dayton," P. M. Bratten, general sales manager, announced.

"This new regional setup with headquarters in the field will prove advantageous in many respects by keeping the factory in closer contact with the distributing organizations and their many dealers," Mr. Bratten continued.

The Southwestern region, the new territory established under this reorganization, will be headed by W. G. Jennings, who recently returned to Frigidaire after almost five years in the armed forces. Mr. Jennings joined the Fort Worth branch as as assistant branch manager in 1933 and succeeded Mr. Bratten, present general sales manager of Frigidaire, as Fort Worth branch manager in 1939. He remained in this capacity until his call to active duty in 1940. The majority of Mr. Jennings military service was in the European Theatre of Operations, where he served as Ordnance Officer for the 6th Corps with the rank of Colonel. F. L. Williams will assist Mr. Jennings as appliance sales manager and R. T. Potter as commercial sales manager.



VALUE IN SMALL PACKAGE— Big things sometimes come in small packages as illustrated in this picture of the pickup head of General Electric's new electronic reproducer which G-E officials say will produce a realism never before obtained from records. The manufacturer claims these features for the development: record reproduction incredibly free from "chatter," needle radiation and scratch prevalent in former systems; reduction in record wear; quality of tone greatly improved; and perfect tonal balance at both low and high volumes. The company will use the new reproducer in every automatic radio-phonograph built by the G-E Receiver Division at Bridgeport, Conn.

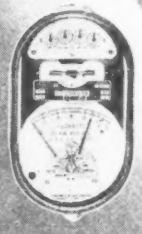
MEASURED

DEMAND

assures recovery of fixed charges

SANGAMO DEMAND INSTRUMENTS

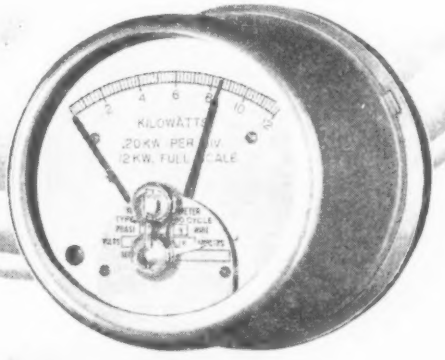
The increasing dissimilarity of modern loads of commercial customers makes it impractical to use averages in establishing a sound basis for recovery of fixed charges. The large proportion of plant investment in relation to the total cost of service deserves exact determination of demand. This can best be done by measurement. Sangamo Lincoln-Type WD Demand Meters are simple, accurate, and economical instruments for this purpose. Sangamo Demand Instruments are available in an extensive line—designed for your particular needs.



Type JWS

Type LC-3 with LG Demand Register

Combination Watthour and Lincoln Demand Meter, and meter with demand register, for installations where mounting space is limited.



Type WDS

Sangamo Lincoln-Type WD Demand Meters are made in both A and S construction for any singlephase or polyphase circuit for the measurement of kilowatt demand. Operating independently of the watthour meters, these, instruments are a convenient means of obtaining demand on existing watthour meter installations, as well as on new services.

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD • ILLINOIS

The temporary headquarters for the Southwestern region will be located at 1100 Cadiz Street, Dallas, Texas.

H. T. Mattern, who rounds out 16 years with the Frigidaire Division, will continue as Central regional manager with headquarters at the factory in Dayton. Before the war, Mr. Mattern was Central sales manager of the appliance division. Appliance and sales managers are S. H. Zoellner and M. C. Schenk, respectively.

Headquarters of the Eastern region, will be located in New York City as soon as suitable offices can be secured, with R. H. Huston as manager, H. M. Cline as appliance sales manager, and W. F. Layer as commercial sales manager. Mr. Huston, formerly Western sales manager of the Appliance Division, has been a member of the Frigidaire organization for the past 22 years.

F. M. Davison, former Western regional manager, will head the Southeastern region with headquarters at 1175 Peachtree, N. E., in Atlanta, Georgia. Mr. Davison started with Frigidaire in 1923 and subsequently managed many Frigidaire branch offices, more recently Kansas City and New Orleans. R. L. Hatfield will head up Appliance Sales and A. C. Doak, Commercial Sales.

In the Far West, R. G. Hutchison, who just celebrated 26 years with General Motors, will continue as Pacific Coast regional manager with new offices located in the Western Merchandise Mart, 1355 Market Street, San Francisco, California. F. W. Beecher is manager of the Appliance Sales Department, and A. G. Foote will manage Commercial Sales.

Benjamin Plans for Future Lighting Sales

AN INTERESTING variation in advertising is offered in the postwar series of Benjamin Electric Manufacturing Company, Des Plaines, Illinois, which will again feature the electrical contractor and the contractor-dealer as the logical person to ask about better lighting.

This first campaign deals specifically with floodlighting of service stations and the lighting of service garages, automotive repair departments, tire shops and other automotive establishments.

"Ask Your Electrical Contractor" is the keynote of the advertising appearing in the Benjamin "Scrapbook of Improvement Suggestions," a 52-page scrapbook on the modernization and improvement of service stations and other automobile establishments. The company believes that when a man is interested in modernizing, he is bound to be a good prospect for lighting equipment and other electrical work.

Other Benjamin campaigns to help build the lighting business are now under preparation. All of these will promote the electrical contractor as the key man in the selling, installing, and servicing of lighting equipment and in the preparation of lighting proposals.

Circulator's History Shown in Slide Film

THE FRESH'ND-AIRE Company of Chicago, manufacturers of air circulators, have just released a new sound slide film which gives a complete story about Fresh'nd-Aire circulator—successor to the fan.

This new sound slide film traces the history of air conditioning through the ages and presents the various events underlying the creation of the Fresh'nd-Aire circulator. It dramatically portrays the great difference between over-all air circulation and mere air pushing, then gives a complete picture of the manufacturing facilities of the Fresh'nd-Aire Company.

Last but not least, the film actually shows a step-by-step build-up of a Fresh'nd-Aire circulator and gives various sales features pertaining to each of the various parts.

Florida Distributors Open New Warehouse

FLORIDA Radio and Appliance Corporation, wholesale distributors of Miami, announce the opening of a new warehouse in Tampa, located on Pratt Street at Florida Avenue. This operation will be under the management of Marshall L. Foreman, Tampa division manager, and is designed to adequately serve Central Florida, together with the West Coast of the Peninsula of Florida.

This is a very modern warehouse, served by its own railroad siding, and designed for inside truck loading.

The company now has complete warehouse and display facilities, together with full branch operations, in Jacksonville, Tampa, and Miami, the latter being the location of their executive offices. Operation of the company is strictly wholesale.

"—and madam will be 'the toast of the town'!"

Additions Announced To Mills-Morris Co.

E. C. TUCKER, Sam Hubbard, Jr., and Jerome Brode are new additions to the Mills-Morris Company, Memphis, Tennessee, sales organization. Mr. Tucker will make his headquarters at Tupelo, Mississippi. Messrs. Hubbard and Brode will be located in Memphis with the Radio and Electrical Appliance Department.

Construction of the $100,000 addi-

Newest member of the Hazard Building Wire Family...

Hazard PERMEX Building Wire Type RU

Insulated with rubber Latex and covered with a protective Dilec fibrous sheath, PERMEX offers you a new small diameter building wire fully approved by 1946 NEC for new wiring and rewiring

Here are the quick facts about this latest of Hazard Building Wires to help you make adequate wiring a reality in your new construction jobs or remodeling contracts.

Hazard PERMEX offers:

1. The smallest diameter building wire . . . saves conduit space, leaves room for expansion.
2. 90% unmilled grainless rubber insulation.
3. Exceptional mechanical strength and elasticity.
4. High dielectric strength and insulation resistance.
5. Up to 60 degree C. operating copper temperature.
6. Weather-proof, flame-resistant Dilec fibrous covering.
7. Smooth lubricated finish for easy pulling . . . comes in standard building wire colors.
8. Full approval under 1946 National Electrical Code as type RU for both new wiring and rewiring.

For further information get in touch with your nearest Hazard representative or write The Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

insulated wires and cables for every electrical use

tion of the Mills-Morris Company, which will provide the 26-year-old company with 47,000 square feet of floor space compared to its present 23,000 is expected to be completed in 30 days. The new building will be located at 183-187 South Dudley, adjoining the firm's present headquarters. When completed, the two buildings will have a combined frontage of 215 feet.

Approximately 4,000 square feet will be devoted to display space for equipment, electrical appliances, etc. The machine shop will be extended to double its present size and new equipment added. Offices will be air-conditioned, and there will be special offices for salesmen and a conference room for manufacturers' representatives.

R. R. Meadows, general manager, stated that the new building will be used to distribute Motorola radios, Marquette home freezers, radio tubes, batteries, parts and equipment, and electrical appliances.

ANNIVERSARY MODEL DISPLAY SET—Promotion of Stewart-Warner's 22nd anniversary model radios is being stimulated by the nine-piece display set which features a life-size cut-out of a young woman "listening" to an actual radio, and a birthday cake with twenty-two candles. "Strobo-Sonic Tone" and other Stewart-Warner post-war features are described and the slogan, "You can hear the difference" is prominent. A feature of the radio shown is its detachable legs which converts the consolette model into a table model.

Distributors Added for Presteline Appliances

ADDITIONAL distributors for Presteline major home appliances recently added to the eastern and southern territories by Pressed Steel Car Co., Inc., are announced by A. Raysson, general sales manager.

The new distributors are as follows: Edwards-Harris Company, Atlanta, Ga.; Williams & Shelton Co., Inc., Charlotte, N. C.; David Kaufmann's Sons, Baltimore, Md.; The Shield Company, Fort Worth, Texas; The Corpus Christi Hardware Company, Corpus Christi, Texas; United Distributors, Inc., New Orleans, La.; Gulf States Distributing Co., Birmingham, Ala.; Major Appliance Corp., Boston, Mass.; and Eddy & Co., Inc., Providence, R. I.

Verd-A-Ray Division Managers Hold Meet

"AGGRESSIVE merchandising" was the keynote at the Division Managers' Meeting of Verd-A-Ray Corporation, in the Stevens Hotel, Chicago, during the recent International Lighting Exposition.

Since this was the first Division Managers' Meeting since the reorganization of Verd-A-Ray's sales staff, new sales policies and revised procedures were also emphasized.

National advertising in mass-circulation consumer magazines and in trade papers, colorful new store displays and selling helps, and the introduction of new products highlight Verd-A-Ray's sales staff, new sales policies and revised procedures were also emphasized.

National advertising in mass-circulation consumer magazines and in trade papers, colorful new store displays and selling helps, and the introduction of new products highlight Verd-A-Ray's merchandising program. Unlimited 50-50 cooperative advertising, which has spearheaded recent successful local sales drives, will be continued and encouraged.

Ed T. Locke Company Adds New Members

THE ED T. LOCKE Company, 906 Main Street, Cincinnati 2, Ohio, factory representatives for leading electrical appliance, housewares, and hardware manufacturers, announces the addition of three new memers to its sales organization.

Thomas J. Farrell, with headquarters in Cincinnati, will cover parts of Ohio, West Virginia, and Tennessee; Jack H. Roberts, with headquarters in Indianapolis, Ind., will cover parts of Indiana and Kentucky; and Harold E. Kelley, with headquarters in Knoxville, Tennessee, will cover parts of Tennessee, Virginia, Kentucky, and West Virginia.

The Ed T. Locke Company is currently featuring a very comprehensive program emphasizing direct cooperation with the retailers in their territory through wholesalers.

Barnes and Brass Electric Co. Sold

THE WHOLESALE electrical supply business of the Barnes and Brass Electric Company, of Clarksburg, W. Va., has been purchased by the Westinghouse Electric Supply Company, it was announced recently by D. M. Salsbury, executive vice-president of the Westinghouse company, which is a subsidiary of the Westinghouse Electric Corporation.

Douglass B. Williams, district manager of the Westinghouse Electric Supply Company, of Pittsburgh, which will be headquarters for the Clarksburg branch, was in Clarksburg making arrangements for the acquisition. He said that there would be little change in the Barnes and Brass Electric Company personnel with the probable employment of more people as the facilities of the distributing organization are increased.

He announced that Earl L. Charles had been appointed branch manager of the new business. Mr. Charles has been with the Barnes and Brass Electric Company for 15 years as manager of their business.

What does this Mark mean to you?

Everyone knows that the Virden "V" stands for good value in lighting fixtures . . . that's an idea that has been accepted straight across the board for many years and sustained by continuous performance. But the Virden "V" also stands, of necessity, for everything that makes the good value possible.

What are some of these things?

Research is one. This embodies analysis of the market from the standpoint of style, measurement of the rhythm and tempo of design; and analysis of the various geographical segments of the U. S. from Maine to California, from the Canadian line to the Gulf, in terms of architectural value, needs, wants.

Styling is another. We have suggested some of the style influences in the preceding paragraph on research. These have to be interpreted in form and pattern by our designing department and there studied from the standpoint of available materials, metals, plastics, glass. The models must then stand up under the four critical tests of: (1) eye appeal; (2) convenience and ease of operation; (3) ease of application—minimum of work in assembly; (4) efficiency in terms of good illumination.

Production. The essence of our business is mass production of high quality lighting fixtures on a basis where careful planning and the most modern production equipment, combine with skilled labor to produce popular items at reasonable prices. The Virden "V" stands for maximum dollar-and-cent value.

Contractors and builders look for the Virden "V" on the package and find its presence there an assurance of complete satisfaction and reliable service.

The John C. Virden Company • Cleveland, Ohio

Member American Home Lighting Institute

Names in the News

Twelve major changes in the administration of the Virginia Electric and Power Company were announced recently by **J. G. Holtzclaw,** president of the utility company in Richmond, Va.

Mr. Holtzclaw announced the appointment of **Howard L. Crumley,** vice-president in charge of the Western Division, with headquarters at Alexandria, Va., as new chief engineer with system-wide supervision of all engineering and construction work.

George E. Kidd, manager of the Potomac District at Alexandria, has been named acting district manager of the Richmond District. Mr. Kidd is a former lieutenant-governor of the fourth division of the Capitol District of Kiwanis International.

John W. Howard, district manager at Newport News, will become vice-president in charge of the Northern Division, consisting of the newly developed Potomac District, extending south to a point between Dumfries and Woodbridge, Va., and the new Rappahannock District, with headquarters in Fredericksburg, Va. Mr. Howard will have his headquarters at Alexandria.

James M. Wilson, district manager of the Alleghany District at Clifton Forge, will now have his headquarters at Charlottesville, Va., as a newly elected vice-president of the company and in charge of the Western Division comprised of the present Blue Ridge District, the Southern District, and the Alleghany District.

Bernard J. Dorsey, manager at Newport News, was appointed district manager of the Peninsula District, succeeding Mr. Howard.

Ray C. Hopkins, manager at Arlington, was appointed district manager of the Potomac District, at Alexandria.

A. J. Young, manager at Fredericksburg, was appointed district manager of the new Rappahannock District.

Other appointments include: **O. V. Sessoms,** district engineer at Charlottesville, as district manager of the Alleghany District; **Richard M. Bush,** as district superintendent of the Blue Ridge District at Charlottesville; **Walter E. Matthews,** district engineer at Fredericksburg, as district superintendent of the Alleghany District at Clifton Forge; **George F. Duborg,** former district manager at Williamsburg and recently returned from the service, as manager at Arlington, and **E. Wiley Fortune,** district superintendent of the Alleghany District, at Clifton Forge, as district manager of the Roanoke District at Roanoke Rapids, N. C.

* * *

R. E. Joines has been named acting manager of construction materials sales for the General Electric Company in the Southeastern District, with headquarters in Atlanta, according to **C. R. Pritchard,** general sales manager of G-E's Appliance and Merchandise Department.

A native of Atlanta, Mr. Joines studied at the Georgia School of Technology, served with the Army Air Corps in World War I and joined the General Electric Contracts Corporation in 1934 as its Florida representative.

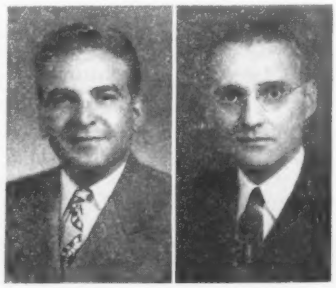
After moving to the Charlotte branch of G.E.C.C. as manager and then to the G.E.C.C. general office in New York as director of sales promotion and advertising in the business development department, he went to Bridgeport in 1942 for a war job with the Ship Fittings Sales Division.

From there he went to New Orleans as Southeastern District representative for construction materials sales, the position he held prior to his new appointment.

* * *

L. Morris Landers Company, manufacturers' representatives, Atlanta, has announced the addition of two new members to the firm: **B. Allen Bryant** and **E. F. (Gene) Lombardy.**

Mr. Bryant has had 12 years of field experience dealing with electrical wholesalers, light and power companies, and electrical contractors. Mr. Lombardy, who has been associated with electrical contractors and industrial plants in the South since 1938 will make his headquarters in Charlotte and will serve the Carolinas.



E. F. Lombardy **B. A. Bryant**

Among the accounts which the L. Morris Landers Company represents are as follows: Accurate Manufacturing Company, General Illuminating Co., Good Manufacturing Co., Goodrich Electric Co., Great Western Fuse Co., Pelham Electrical Manufacturing Co., and Penn-Union Electrical Corp.

* * *

Don G. Mitchell, former executive vice-president of Sylvania Electric Products, Inc., was elected president of the company by the Board of Directors who met at the Parker House in Boston recently. At the same time **Walter E. Poor,** who has been president of Sylvania Electric since 1943, was elevated to the chairmanship of the Board of Directors.

W. E. Poor **D. G. Mitchell**

At the age of 41, Mr. Mitchell becomes one of the country's youngest presidents of a major corporation. Sylvania Electric, whose sales in 1945 were $126,000,000. Before joining the company in 1942, he had been affiliated in top sales capacities with McGraw-Hill Publishing Company, American Can Company, Marshall Field and Company, and the Pepsi-Cola Company.

Mr. Mitchell, who attended the University of Cincinnati and the University of Florida, is a member of the Board of Directors of the American Management Association, a vice-president of the Sales Executive Club of New York, and has been active in the National Association of Manufacturers and the American Marketing Association.

The new chairman of the board, Mr. Moore, has been associated with Sylvania Electric since 1911. A graduate of M.I.T. in Electrical Engineering in 1908, he is a member of the American Institute of Radio Engineers and serves on the Board of Governors of the National Electrical Manufacturers Association.

* * *

The appointment of three district representatives for construction materials sales for the General Electric

THE NEW Fibron #5373

FLEXIBLE PLASTIC TUBING

Test Data

Tensile Strength.....3000 P.S.I.
Dielectric Strength (.020" wall) Wet.....1000 VPM
Dry.....1000 VPM
Life at 105° C.....2000 Hrs.
Chemical Resistance (room temperature)
50% Sulfuric Acid and 30% Sodium Hydroxide.....Unaffected
Does not support combustion
Low Temperature Flexibility
I.V.I. Pinch test.....—40°C.
Bell test.....—30°C.
Heat Endurance (.166" ID tubing, .016" wall) ASTM-D350-43T): 7 days @ 125° C.—No crack when bent 180° around ¼" mandrel—Retains flexibility when varnished and baked 22 hours at 260° F.—No flow or drip during 8 hours at 300° F.

This Irvington formulation provides new advantages, new cost-saving features, for many plastic tubing applications. For example: Transformer leads of #5373 remain flexible even after varnishing and baking . . . Underwriters' Laboratories approved #5373 insulation on applications involving continuous operating temperatures up to 75 deg. C. and intermittent temperatures as high as 85 deg. C. In addition, #5373 possesses the excellent electrical, mechanical and chemical properties which distinguish all Fibron tubings.

Tubings of Fibron #5373 are available in all standard colors and sizes, and in heavy wall thicknesses—in 36" lengths, continuous coils, or cut pieces. For full details and generous samples, write Dept. 58 Irvington Varnish and Insulator Co., Irvington 11, New Jersey.

IRVINGTON *Varnish and Insulator Company*
IRVINGTON 11, NEW JERSEY, U.S.A.

Company has been announced by **R. E. Joines,** acting manager of the Southeastern District.

R. A. Cochran, former district representative in Richmond, Va., who returned after service as a Lieutenant Colonel in the Army, has been assigned to Nashville, Tenn.

J. M. Murphy, who also served in Richmond, before entering the armed forces, has been named to the post in Jacksonville.

A. W. Metheny, a former employee of the tungar sales office in Bridgeport, Conn., will have his headquarters in Atlanta.

* * *

Edwin M. Clapp of Atlanta, manager of the Georgia Power Company's industrial power division, has been appointed Columbus division manager succeeding **T. S. Sloan.** At a meeting of the board of directors, Mr. Clapp was made a vice-persident.

According to an announcement by **W. E. Mitchell,** president of the company, Mr. Sloan has been granted an indefinite leave of absence because of illness and has resigned his position. He has been with the company and its predecessors since 1908 and has been stationed in Columbus since August, 1937.

Before joining the Georgia Power Company in 1928, Mr. Clapp was employed by General Electric Company and Fairbanks-Morse and Company. His first assignment with the Power Company was as an industrial engineer at Macon. Later he was appointed assistant manager of the industrial power division, and, in 1937, manager of the industrial power division.

* * *

Three appointments were announced recently by Edison General Electric (Hotpoint) Appliance Company, and are as follows:

W. W. Gibbs, Knoxville, Tenn., has been named sales promotion manager for the southern sales region, in Atlanta. He has spent the past three and a half years in the company's Chicago organization.

H. L. Cushing, of Newark, Ohio, has been appointed district sales manager of the Dallas, Texas, district.

D. H. Risher has been named district sales manager for the Charlotte, N. C., district, and his headquarters are at Room 516, Wilder Building.

* * *

J. H. McGuire, adequate wiring supervisor for the Atlanta Division, Georgia Power Co., has been promoted to supervisor of adequate wiring in the general office.

During 1940 and 1941, Mr. McGuire handled adequate wiring and new home promotion work in the Atlanta Division.

In his new capacity he will be available to help all divisions in the company promote adequate wiring and packaged mortgages among architects, contractors, builders, building and loan associations, banks, electrical contractors, dealers, etc., and help train division personnel responsible for these activities. He will also be available to help the Home Service Division personnel wherever needed in furthering the adequate wiring program.

* * *

James W. Shackleford, recently appointed district merchandiser in the Southeastern states for the Stromberg-Carlson Company, has already taken up his new duties, according to **Clifford J. Hunt,** sales manager, radio division.

W. W. Gibbs

J. W. Shackleford

Mr. Shackleford was recently discharged from the army after serving in the U. S. Army Signal Corps as assistant executive officer at Fourth Service Command headquarters in Atlanta, Ga., with the rank of captain.

A native of Eustis, Fla., he was educated in Gainesville and the University of Florida from which he was graduated in 1934 with the degree of bachelor of science in electrical engineering.

Prior to his tour of Army duty, he served for eight years as electrical department manager in the Baird Hardware Company of Gainesville. He was associate radio engineer for the War Department for nine months prior to his active duty in the service.

* * *

The Thomas & Betts Company, Inc., of Elizabeth, N. J., manufacturers of electrical fittings, recently announced the appointments of Fred **M. Shepard** as district manager of its Cleveland territory and **Wyman Elliot** as district manager of its Atlanta office.

Mr. Shepard was born in Montclair, N. J., and became associated with T & B in 1935. In the course of his career with Thomas & Betts he has worked as salesman in Elizabeth, New York and Chicago. In 1942 he became district manager of the Southeastern territory with headquarters in Atlanta, where he remained until he accepted his present position as manager of the Ohio territory. In Cleveland his offices will be at 1960 Euclid Avenue.

Mr. Elliot, a native of Colorado Springs, Colo., attended Carleton College, and joined Thomas & Betts in 1939 as a salesman. After working in the sales department in the home office, he was assigned to the Chicago office as salesman and ultimately became district representative in the Kansas City territory, which post he held until promoted to his present position. The firm offices are located in the Citizens and Southern Building in Atlanta.

* * *

The manufacturers representative business formerly operated in the name of **C. Robert Churchill,** New Orleans, La., who passed on recently, will be continued under the name of "Frieshon and Belsom." The new owners are **W. F. Frieshon,** who was associated with Mr. Churchill for 15 years, the last four as a partner, and **E. J. Belsom,** who has been representing a large machine tool supply house in New Orleans for the past several years. The company will handle a wide range of electrical equipment and devices.

* * *

Shaw Hardy, who has been connected with the electrical industry for the past 25 years, the past nine years in Florida as a manufacturers' representative, has recently added the **W. N. Matthews Corporation** line to his sales agency.

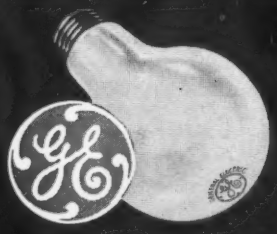
Here's a "Best Seller" you'll never stop reading

"3 A's OF STORELIGHTING" is General Electric's brand-new, fact-packed book for everyone who sells lamps and lighting. It's a quick-reference book with all the up-to-the-minute data on modern sales lighting...a pocket-size engineering manual that answers dozens of technical questions about lighting applications, equipment and installations.

CHANCES ARE that not every lighting salesman will neglect his best girl, stay up nights, or grab his lunch on the run to read the "3 A's of Store Lighting." But you'll get a sharp surprise when the count is in. Because this handy book gives salesmen the facts... clear, concise and accurate. It shows how lighting sells merchandise; gives tangible examples; demonstrates new design ideas; and contains a host of basic data on lamps and lighting equipment.

DON'T LOSE TIME! Advance reports say "3 A's of Store Lighting" will be the book-of-the-year for lighting salesmen. It's a book you can't afford to miss... a book you'll use often and profitably. It costs only 50c a copy. Call or write your nearby G-E Lamp Office for a copy NOW...better do it today!

G-E LAMPS



Constantly improved by research to

Stay Brighter Longer!

GENERAL ELECTRIC

Spot News from the South

Fairhope, Ala.—Phil Brady, for 20 years an electrical appliance and supplies dealer, is remodeling and enlarging his building. It will be lengthened to 120 feet, and the front will be converted into a display room for milk coolers, beverage boxes, refrigerators, and other electrical appliances. Rear shop will be enlarged to take care of refrigeration service, radio service, electrical repairs, and electrical wiring.

* * *

Little Rock, Ark.—A $23,000,000 expansion planned by the Arkansas Power and Light Company for the next four years, will include a new 30,000 kilowatt generating plant here and 3,500 miles of rural transmission lines designed to serve more than 10,000 new customers.

* * *

Conway, Ark.—B. G. Adams, owner of the newly established Adams Lumber Company, has inaugurated an electric appliance department. Special efforts will be made to sell electric kitchens in new homes.

* * *

Frostproof, Fla.—The Adams and Adams Electric Appliance Store has occupied the building recently vacated by the B. & B. Grocery.

* * *

Winter Haven, Fla.—Clair Gould, expert radio repairman, is now associated with the Cook Electric Shop. He is from Indianapolis, Ind., and for the past four years has been connected with electronic laboratories there.

* * *

Atlanta, Ga.—An extensive job of remodeling and enlarging to include a broader service and sales policy has been done by L. E. Wilson, proprietor of the Morningside Radio Service. He is now handling all types of major and plug-in appliances, as well as radios. Mr. Wilson also owns a radio and appliance store in the Buckhead section.

* * *

Pittsburg, Ks.—Beasley Tire Service, located in a new and modern superservice type building at 9th and Broadway, is handling a line of major and traffic electric appliances.

* * *

Manhattan, Ks. – The Tri-County Refrigeration Co., formally opened at its new location, 227 Poyntz, recently; the new location has been completely remodeled and redecorated. A complete repair service will be featured.

New Orleans, La.—A new sales and display room has been opened by United Refrigeration at 2338 Tulane Ave., for both commercial and home refrigeration sales. The company is owned by J. C. Schexnaydre and Mark Zeringue.

* * *

New Orleans, La.—Fifty-five members have been admitted to the New Orleans chapter, National Electrical Contractors Association, Rudy Venir, manager, announced.

* * *

Itta Bena, Miss.—M. T. Williams and his son, Curtis Williams, will open an electrical appliance and furniture store in the Williams building which is now being remodeled.

* * *

Canton, Miss.—Earl Evans, Jr., and Grant Evans, brothers, have opened The Evans Company, a new electrical appliance merchandising organization.

* * *

Mexico, Mo.—Audrain County Refrigeration and Electric Company, owned by Wm. Eoff, is a new appliance company here.

* * *

Jefferson City, Mo.—City Appliance Company is a new appliance firm which has opened for business.

* * *

Charlotte, N. C.—Electrical contractors, headed by Ellis Kennedy, of Raleigh, appeared before the Mecklenburg County Commissioners here recently to request the appointment of electrical inspectors to examine future wiring outside the city limits to insure the maintenance of required safety regulations.

The contractors pointed out that the county is without an electrical code for the rural areas and stated that many incompetent persons are engaged in wiring homes and buildings. They pointed out that 80 of North Carolina's counties already have an adequate electrical code and provisions for enforcing the regulations.

The commissioners indicated a willingness to set up a code and to appoint the electrical inspectors at a later date.

"Just as I suspected, Mrs. Jones — you're a 'sweeper-under'!"

* * *

Sallisaw, Okla.—The Modern Home Appliance Store was opened here recently with O. M. Orendroff and Malloy Orendroff, Jr., as owners.

* * *

Cement, Okla. — Midwest Rural Electric, an electrical appliance store, has opened here with S. Preston Williams as manager. The new store will handle a complete line of appliances and will do repairs and construction.

* * *

Columbia, S. C.—Since receiving his discharge from the Navy, Coy Derrick, of 308 S. Gregg St., former owner and operator of Coy's Refrigeration Service, 731 Main St., plans to reopen his business in the near future. The refrigeration service will be complete with service, sales, and commercial refrigeration equipment.

* * *

Nashville, Tenn.—J. N. Stansell was elected president, and C. O. Davis, of Memphis, first vice-president, of the Tennessee Electrical Contractors Association, in an annual convention here recently.

* * *

Beeville, Texas—The new home of the R. Z. and B. B. Shipp Electrical Company was scheduled to open recently.

* * *

La Marque, Texas—The La Marque Public Service Company has moved into its new building on the corner of Highway 75 and First St., it has been announced. Dan Payton is manager of the new office.

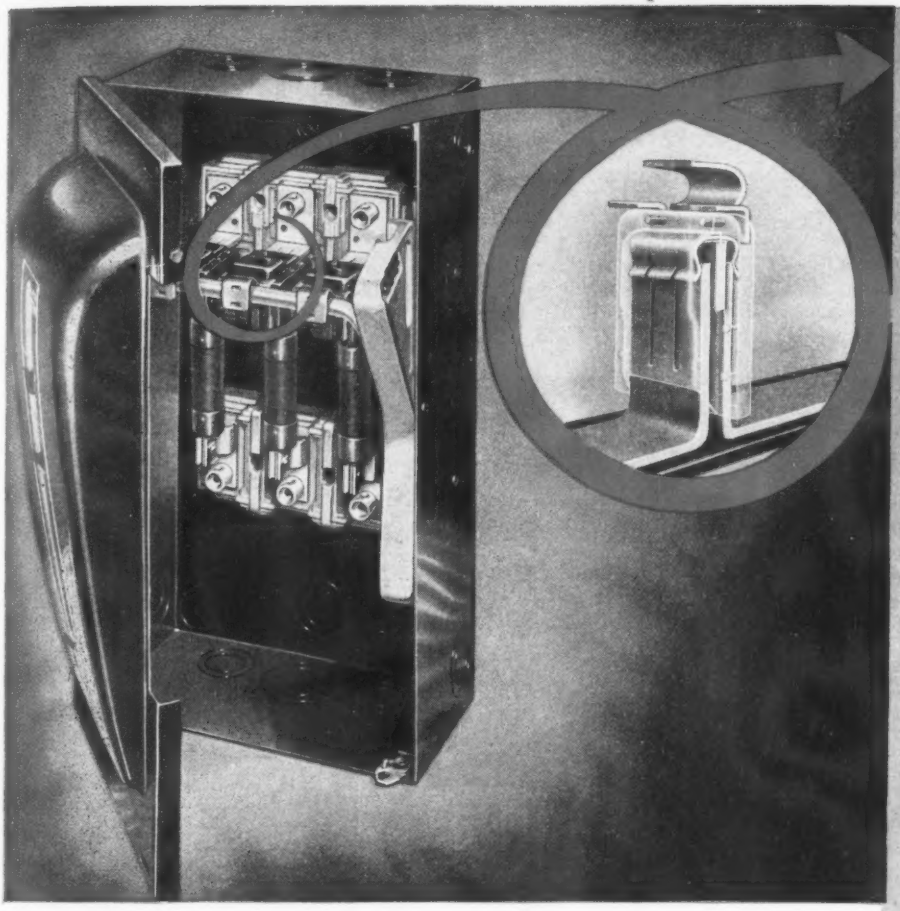
* * *

Lynchburg, Va.—The Cox Electrical Appliance Company has opened an appliance and radio store at 608 Fifth Street.

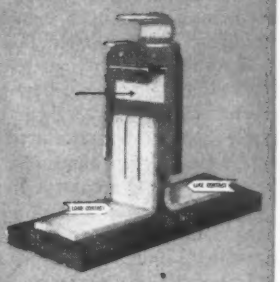
* * *

Glasgow, Va.—The Lees-Cochrane Company, Inc., of Bridgeport, (Montgomery County), Pa., is building a large addition to their rug plant here. The electrical work is being done by the Bryant Electric Company, of High Point, N. C.

Less arcing...longer life...

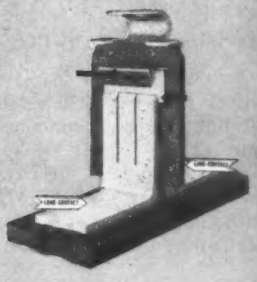


EXCLUSIVE *Vacu-Break* AND CLAMPMATIC CONTACT FEATURES



"CLAMPMATIC" SWITCH CONTACTS

With formed Bakelite cover removed, illustration shows moving contact confined within the slotted section of the arcing chamber, free to engage stationary contacts when switch is operated from "OFF" to "ON" position.



EASY MAKE AND BREAK

(Left) When operated to OFF position, clamping spring first releases its pressure to remove disconnecting resistance.

(Right) When operated to ON position, contact (slug) first engages stationary line and load contacts before clamping spring makes full pressure contact.

BOLT TIGHT CONNECTIONS

Moving contact (slug) is held tightly between line and load contacts by clamping pressure spring in full ON position.

WITH BULLDOG *Vacu-Break* SAFETY SWITCHES

SAFETY SWITCHES are the guardians of electric circuits. They keep power on the job. That's why you'll want to weigh the advantages of BullDog Vacu-Break Safety Switches—for today and for the years to come.

There are six plus values in Vacu-Break Safety Switches—six exclusive design features to make them ideal productive devices for trouble-free operation under heavy production schedules.

1. Less arcing and resultant longer life, because BullDog's formed "Bakelite Arcing Chambers" confine and suffocate arcs to prevent burning and pitting of contacts.
2. "Clampmatic" switch contacts, providing "clamp type pressure" when contacts are closed—quicker, easier release when the handle is thrown to the OFF position.
3. Quick action mechanism assures positive "ON and OFF" operation with a minimum number of wearing parts.
4. Ample wiring room is provided without sacrificing compactness.
5. Solderless wire grips.
6. Streamlined handle placed within the cabinet lines to allow front operation and closer banking of switches.

BullDog Vacu-Break Switches—first in quality and first in safety—keep power on the job to help you speed production and reduce maintenance costs. Get full information now—either by consulting a BullDog field engineer or by writing us for descriptive folders.

• • •

Manufacturers of SafToFuse Panelboards—Switchboards—Circuit Master Breakers—BUStribution DUCT for "plug-in" power—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for Portable Tools, Cranes and Hoists.

BULLDOG
ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN. IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO. FIELD OFFICES IN ALL PRINCIPAL CITIES

New Electrical Products

New 4500° White Lamps

NEW FLUORESCENT lamps, designated as 4500° white lamps, in 40-watt T12 and 100-watt T17 sizes have been announced by Sylvania Electric Products, Inc., of Salem, Mass.

A result of more than two years of research and testing of new phosphorescent coatings and lighting performance, these lamps are offered for many applications where lighting can be improved by using a colored light source "warmer" than standard 6500° daylight lamps and "cooler" than the standard 3500° white ytpes.

Initial ratings for the new 4500° lamps are 50 lumens per watt for the 40-watt size and 40 lumens per watt for the 100-watt size. They are interchangeable with fluorescent lamps of the same wattage ratings now used in existing fixtures and will be distributed through regular trade channels.

Precision Snap Switch

A NEW PRECISION snap switch with virtually an unlimited number of applications has been announced by the Industrial Controller Division of the Square D Company, 4041 N. Richards Street, Milwaukee 12, Wisconsin. The device is described as a self-contained mechanism for making or breaking a

circuit, in small space, with short movement and light pressure.

Although small in size (approximately 2½"x1"x⅞") this new Class 9007 Type A snap switch features husky construction, unusual mounting convenience and 550-volt ratings, all of which greatly widen its range of application. During months of laboratory tests, it withstood punishment hundreds of times greater than required in actual service.

Because of its tremendous scope of application, the Square D Company is suggesting that industries "write their own tickets" when it comes to putting this new switch to work. Bulletin 204, carrying complete details of the device, may be had by writing the Square D Company.

New Safety Top Range

THE NEW Presteline electric range, featuring the safety top, is announced by the Pressed Steel Car Company, Inc. The new safety top range has the cooking units in a row across the

back of the range, out of the reach of small children.

If a kettle should happen to boil over, it would merely flow harmlessly over the top of the range. Another safety feature is that if one of the cooking units should be accidentally turned on, no harm would be done. The instant any surface unit is turned on, a signal light glows on the switch panel to call attention to the fact.

Ward Leonard Plug-in Relays

THE HERMETICALLY sealed plug-in relays developed recently by the Ward Leonard Electric Co., Mount Vernon, N. Y., are designed for A.C. or D.C. operation in small radio transmitters, aircraft control circuits and other applications where space is limited.

Completely encased in a cylindrical can, these compact midget type relays provide excellent protection against adverse atmospheric conditions such as moisture, dust, gases, corrosion, etc. Relay coil and contact connections are totally enclosed within the metal housing and are brought to the prongs of a standard octal plug base.

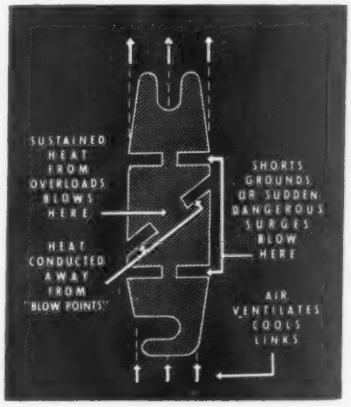
Plug-in relays are available in contact combinations to double pole, double throw with A.C. contact ratings (at commercial frequencies) of 4 amperes, from 0 to 115 volts and D.C. contact ratings of .5 amperes from 25 to 115 volts.

Balanced Lag Link

A BALANCED lag link has been designed by Pierce Renewable Fuses, 151 Pacific Avenue, Buffalo 2, N. Y., which puts extra lag in the low overload working range to avoid unnecessary "blowing" and work stoppage. At the same time positive protection is provided against damage to equipment from high current surges due to shorts or grounds.

Three or more "blow points" are designed into the balanced lag links according to size. The center "blow point" is placed to carry the current of sustained overloads and "blow" only if the gradually increasing overload becomes dangerous.

The narrow "blow points" at the ends are not affected by these low overloads, but can be depended on to "blow" if shorts or grounds cause surges of current that endanger the equipment.


SUSTAINED HEAT FROM OVERLOADS BLOWS HERE
HEAT CONDUCTED AWAY FROM "BLOW POINTS"
SHORTS GROUNDS OR SUDDEN DANGEROUS SURGES BLOW HERE
AIR VENTILATES COOLS LINKS

The company offers free samples of the balanced lag link for inspection. Specify amperage and voltage when writing Pierce Renewable Fuses.

Chromalox Oven Heater

A NEW chromalox oven heater, Type NOU Modified, has been developed to operate at oven temperatures up to 950 degrees by the Edwin L. Wiegand Company, 7600 Thomas Boulevard, Pittsburgh 8, Pa. Its design provides a high heating capacity in a small space. Heating element terminals are centralized at one end of the assembly, and all electrical connections are brought to a single enclosed terminal box to simplify wiring.

Presenting

A Great New CLARK Electric Water Heater Featuring the Remarkable New CLARK "IONODIC" System of Anti-Corrosion Protection

For Complete Details We Suggest that You See Your Jobber or Write for Our Descriptive Folder.

Form No. 202

CLARK

A Toastmaster Product

CLARK

The Greatest Name in Electric Water Heating

McGRAW ELECTRIC COMPANY, CLARK WATER HEATER DIVISION, 5201 W. 65th ST., CHICAGO

The assembly consists of 14 high temperature chrome steel sheathed strip heaters.

How to Put Punch In Your Advertising

(Continued from page 40)

The basic advertising rule, *to hit a buying urge* in both headline and body copy, is needed about as little as the traffic law which states an automobile driver must signal before turning. Few advertisers in their selling zeal remember to talk the buyer's language and not the seller's.

A typical example of seller's talk is advertising copy which described a washing machine as made "from finest materials," and as "the best value we've ever sold." Does that offer anything to the housewise who reads it? It does not, but an appeal telling about how "Mrs. Jones plays bridge on wash day now" would hit a self-interest chord because playing bridge, or something equally relaxing, is exactly the way every housewife who does her own wash would like to spend Blue Monday.

Elmer Wheeler, president of the Tested Selling Institute of New York, once advised restauranteurs to sell the sizzle rather than the steak. People buy the pleasure of a good meal rather than a hunk of meat; they buy good music, not radios; easier cooking or praise from husbands, when they purchase ranges. Selling copy must arouse *emotion*. Solid, statistic-quoting copy may be indispensible when it will be read by engineers; but to hit the average consumer, emotion is needed.

When the reader's eye has been brought into the main selling copy through attention-grabbing layout and interest aroused by the headline, he still is not sold. To sell him, an effectively-written block of selling copy must do certain things. These are: (1) keep the reader's attention; (2) arouse his interest; (3) secure conviction—belief that what the advertiser offers will satisfy a need; and (4) *sell* him. Every well-prepared advertisement concludes with a "hook," something propelling the reader to action. "Do it *now*." "Write this minute for the free sample." "Call us immediately." "Do something this second"—before the white-hot buying urge has time to cool.

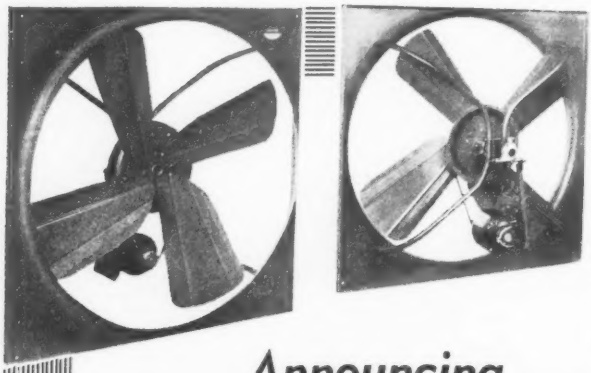
The notion that advertising copy needs to be brief is dying—fortunately; for brevity for brevity's sake has no more place in advertising than in person-to-person selling. The only rule of thumb is that copy should be long *enough* to tell and sell its story effectively.

Utility Executives' Annual Conference

(Continued from page 30)

unless the employee can get a fair wage for his skill. Nor will the product be produced very long if either the employee or the investor tries to hog all of the benefits at the expense of the other or at the expense of the consumer.

"And herein lies the greatest threat of the wage-price policy to free enterprise—it is deliberately designed and administered to give all the benefits to one powerful voting group—labor, and especially union labor—at the expense of the unorganized voting groups which make up the balance of our economy. If this policy is continued it will dry up the supply of investor capital because no one is going to put his savings into any industry knowing that he is licked before he starts. And when that happens an all-powerful



Announcing . . .

"Silver-Aire" Fans

EXHAUST OR ATTIC

We take pride in announcing the "Silver-Aire" Fan, for both exhaust and attic use. These fans are supplied with either G.E. or Westinghouse motors, and are available in 36" and 42" sizes.

Available immediately in limited quantities to jobbers ONLY.

A PRODUCT OF

C & H AIR CONDITIONING FAN CO.
INCORPORATED
1603 DEKALB AVE., N. E. ATLANTA, GA.

Correspondents Wanted

An Opportunity for Men in the Electrical Industry Who Can Write Up the News

If you are associated with the electrical industry—know what is going on in your territory—and have the knack of putting it in writing—here is a splendid opportunity to serve the industry and to earn extra money for yourself in your spare time.

Electrical South's postwar policy includes a greatly expanded coverage of local news—merchandising campaigns, adequate wiring promotions, association activities, etc. Additional correspondents are needed in many of the trade territories in the Southern and Southwestern States.

You can obtain complete details by writing at once to the Editor of

ELECTRICAL SOUTH

Grant Building Atlanta 3, Ga.

Standardize on CONDULETS!

You can meet every need from a single source—the world's largest manufacturer of electrical conduit fittings.

(CONDULETS are made only by CROUSE-HINDS)

A few of the many CONDULETS for non-hazardous locations

Type C Condulet with Tumbler Switch

Type FS with Pilot Light, Tumbler Switch and Plug Receptacle

Type ALC Cushion Fixture Hanger

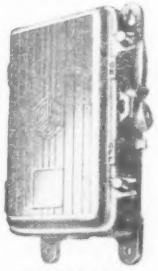
Type FS Condulet with Vaportight Cover

Type OSA Fixture Hanger

Type GST with Receptacle Equipment

Type YSW Vaportight Circuit Breaker Condulet

Type ARE Arktite Receptacle


Type WMK Raintight Safety Switch Condulet

Type APJ Arktite Plug

CONDULETS — the complete line — engineered to enable the electrician to do the job and do it right. There is a type for every purpose.

Arktite circuit-breaking plugs and receptacles.

Vaportight Condulets for use where exposed to weather, moisture, steam or non-combustible dust.

Dust-Tight Condulets for use where combustible dust creates hazardous conditions.

Explosion-Proof Condulets for use in locations that are hazardous because of the probability of the presence of flammable gases or vapors.

A Nationwide Distribution Through Electrical Wholesalers

Type VC Vaportight Lighting Fixture Condulet

Type VDA Vaportight Lighting Fixture Condulet with Reflector

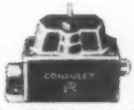
Type DLA Dust-Tight Lighting Fixture Condulet with Reflector

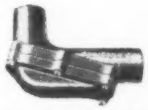
Type EVA Explosion-Proof Lighting Fixture Condulet

Type EVA Explosion-Proof Lighting Fixture Condulet with Shallow Bowl Reflector

A few of the many CONDULETS for hazardous locations

Type GUAT Explosion-Proof Junction Condulet

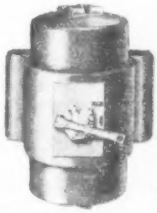

Type EFS Explosion-Proof Tumbler Switch Condulet

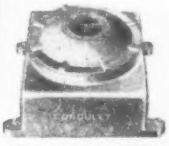

Type LBH Explosion-Proof Junction Condulet for Pulling Cables

Type EMH Explosion-Proof Instrument Condulet

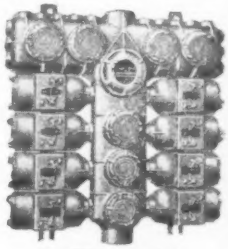
Type GUSC Explosion-Proof Line Starter Condulet

Type FSQC Explosion-Proof Interlocked Receptacle and Switch Condulet


Type EPC Explosion-Proof Circuit Breaker Condulet


Type GUB Explosion-Proof Junction Condulet Any Hub Arrangement

Type EYS Sealing Condulet


Type EDP Explosion-Proof Panelboard

CROUSE-HINDS COMPANY

Syracuse 1, N. Y., U.S.A.

Offices: Birmingham — Boston — Buffalo — Chicago — Cincinnati — Cleveland — Dallas — Denver — Detroit — Houston — Kansas City — Los Angeles — Milwaukee — Minneapolis — New York Philadelphia — Pittsburgh — San Francisco — Seattle — St. Louis — Washington. *Resident Sales Engineers:* Albany — Atlanta — Charlotte — Indianapolis — New Orleans
CROUSE-HINDS COMPANY OF CANADA, LTD., *Main Office and Plant:* TORONTO, ONT.

CONDULETS · TRAFFIC SIGNALS · AIRPORT LIGHTING · FLOODLIGHTS

Government will take over the function which, in a free enterprise economy, is performed by the investor. And the ultimate result as Mr. Baruch has pointed out, will be an economic and social revolution which 'American labor will rue as much as others.' More than that, it will be a hoax on the boys who fought and won the war, ostensible to preserve the American way of life—including those who now sleep in foreign graves scattered all the way from Tunisia to Guadalcanal."

The impact of cooperatives on American business and the resulting tax inequalities were discussed by Dr. Howard Berolzheimer, economist for the National Tax Equality Association.

"Creating jobs for all Americans who wish to work is still the nation's major peace-time problem and the best time to solve it, if we wish to maintain free enterprise, is while we enjoy a period of inflationary prosperity," Paul W. Chapman, dean of the College of Agriculture, University of Georgia, told the conference in his address on establishing rural industries and service in the South.

"We in the South have a greater share of the national responsibility for providing full-scale employment opportunities than other regions of the nation. Like other sections, we face the task of finding permanent jobs for returning veterans and war plant workers. But, in addition, we are in the midst of the most far-reaching agricultural adjustments that have come since slavery was abolished," he continued.

"Farming operations in the South will be almost completely mechanized during the next few years. This change, long overdue from the standpoint of efficiency in terms of production per worker, is now being forced upon Southern farmers because of the high wages paid labor in non-farm occupations.

"Formerly, in the South, the compensation rate of farm workers fixed the wage scale for commerce and industry in the region; now the situation is reversed — farmers who employ labor must pay the wage scale set for non-farm vocations.

"From a regional point of view, the mechanization of agriculture is highly desirable. It will increase per capita earning power of farm workers. For the first time in history, it will give Southern farmers an opportunity to raise their average annual earnings to something like 'parity' with farm incomes in other sections of the nation. But mechanization will bring sweeping changes in farming and in the occupational pattern of the South.

"Mechanized farming will bring larger family-size farms and greater diversification; it will reduce the percentage of farmers in the population and release workers for employment in non-farm occupations.

"In a publication entitled, *A Conversion Program for the Cotton South*, the U. S. Department of Agriculture estimates that the reduction in farm workers, between 1940 and 1956, will be 1,600,000. But this figure does not tell the whole story! Normal growth in the South will, before 1956, produce 1,500,000 who cannot be absorbed in farming. Also, few will remember that in 1940 the South had 1,800,000 unemployed members in its labor force. Adding these figures, we find that the task of the South in the nation's reconversion from war to peace means that we must create 4,900,000 more jobs in towns, cities, and industrial communities than existed in 1940.

"Can 4,900,000 new jobs be created in the South during the next few years—and if so, where and how? This is the question to which leaders in the region must give attention until the task is completed.

"Fortunately, half of the job has already been done. Population shifts have been going forward on a vast scale. Many rural counties have lost as much as 25 per cent of their population. Farmers, notable to make adjustments, are without labor. No section, except the Pacific Coast, can boast of industrial gains equal to those made in the South. Arkansas, for example, has gained 1,000 industries since 1940; Georgia has established more than 300 new industries during the past year. All Southern states have made impressive progress.

"In attempting to complete the task of finding permanent, peacetime employment for all in the South who wish to work, the greatest opportunities lie in the development of those possibilities created by the diversification of agriculture. Farming plus the use of natural resources and products from the land made possible most of the industries now existing in the South.

"Florida's most important industry is the processing of citrus fruit. North Carolina's best-known industries are tobacco, textiles, and furniture. In Georgia, the twelve leading industries, from the standpoint of jobs created, are all identified with farming. These, in order of rank, are as follows: cotton goods, yarn, lumber, hosiery, clothing, bread and bakeries, fertilizers, woolen goods, oil mills, furniture, planing mills, and meat packing. All of these are concerned with the processing of farm products, except fertilizers, which is a farm supply industry. Throughout the South the same principle, namely, that the greatest opportunities for increased employment lie in the further development of agricultural industries and services."

Dr. E. N. Kemler, head of engineering research for the Southern Research Institute, of Birmingham, gave the conference a progress report on the reverse cycle house heating project that is being sponsored by the Southeastern Electric Exchange. (See page 16 of this issue.)

One of the highlights of the conference was the demonstration of the electronic range. This was presented in connection with an address by Jack C. Sharp, vice-president, Edison General Electric Appliance Co., of Chicago, on "Application of New and Old Loads — Their Opportunities." (Mr. Sharp's address will be published in a following issue of this publication.)

The Army and Navy awards to the light and power companies were presented at a dinner meeting the first evening of the conference. The presentation of the Navy scrolls attesting to "outstanding performance" of service in meeting unprecedented electric power requirements for prosecution of World War II were presented by Rear Admiral J. T. Mathews, USN, superintending civil engineer, Area IV.

At the same time, Brigadier General James B. Newman, Jr., division engineer for the South Atlantic Division, presented individual certificates "for patriotic service" to light and power company representatives who served as regional or post coordinators under the Utilities Wartime Aid Program.

W. E. Wood Elected President

At the concluding session, the conference elected W. E. Wood, executive vice-president of Virginia Electric and Power Co., Richmond, as president of the Exchange for the next administrative year. Other officers elected included McGregor Smith, Florida Power and Light Co., first vice-president; M. C. Funk, Appalachian Electric Power Co., second vice-president; and W. M. Rogers, Birmingham Electric Co., third vice-president. E. L. Godshalk, South Carolina Power Co., retiring president, was named an ex-officio member of the Board of Directors, and H. E. Meade, New Orleans Public Service, Inc., was elevated to the Board of Directors.

Relighting with Fluorescents

(*Continued from page 23*)

he will also advise the kinds of installations that help create a pleasing atmosphere that broadcasts a friendly welcome to every customer. Particularly to those customers who are modernizing their fronts and interiors, the alert lighting salesman will recommend the type of lamps and fixtures that will enhance the attraction of every other store appointment. Repainting, remodeling and refurnishing may fall short of their goals unless they are integrated with tasteful, modern lighting.

75,000 See Appliances At Texas Electric Show

(*Continued from page 20*)

forth their best efforts in preparing displays.

Texas Electric Service Company began work on this exposition in October of 1945, at which time Paul Harmon, advertising manager, began an itinerary of calls on manufacturers. In this undertaking, he traveled more than 6,000 miles, selling his company's forthcoming show to manufacturers. So well did he do that seven—Westinghouse, Hotpoint, Norge, Kelvinator, General Electric, Leonard, and RCA—designed and had built, special display units for the show.

Westinghouse and General Electric had displays 80 feet long. Sixty-foot booths were occupied by Admiral, Frigidaire, Norge, and Universal. RCA filled two 60-foot spaces, one of them occupied by one of two television educational exhibits, each of which represents an investment of $50,000. By visual means, these displays tell the story of the time, effort, and money required by television.

Six complete electric kitchens were counted, Norge, Hotpoint, Westinghouse, Crosley, General Electric, and Kelvinator, the latter also occupying large space and providing an unusual touch by installing, over the kitchen sink, an illuminated garden scene that gave the illusion of a view into the backyard.

Exhibitors, incidentally, spent much time and money installing their equipment, but none for fixtures. These were all supplied by TESCO, and Charles Mann, who designed and constructed all fixtures and decorations, said 17,500 man hours of labor were required to produce the properties, including many corner posts for booths, with most corner posts provided with indirect lighting and containing an illuminated panel showing

CRESCENT

Multi-Conductor Control Cables

WITH SYNTHOL INSULATION AND JACKET

Each of the 7 conductors in the CRESCENT Control Cable shown here is insulated with SYNTHOL thermoplastic and the cable assembly as a whole is protected with a SYNTHOL sheath. SYNTHOL is more stable than rubber compounds. It is highly resistant to moisture, oils and most chemicals and will not support combustion.

The individual conductors are color coded for easy identification.

CRESCENT Control Cables are widely used for remote control operation of motors, circuit breakers and other electrical power equipment, and for many types of automatic or supervisory control circuits.

CRESCENT

WIRE and CABLE

NEMA

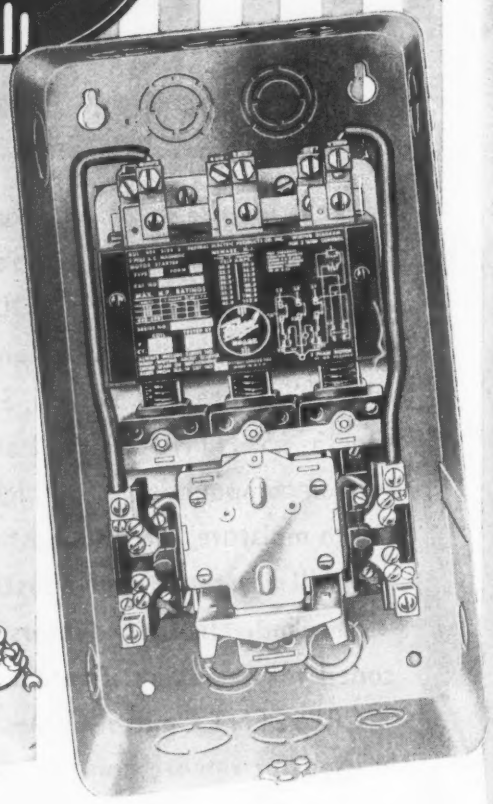
CRESCENT INSULATED WIRE & CABLE CO.

TRENTON, N. J.

ATLANTA, GA., Edgar E. Dawes, 401-402 Rhodes Building
NEW ORLEANS, LA., Paul Hogan, Jr., 305 Levert Building
RICHMOND, VA., Robert W. Fishburne, 112-114 Exchange Bldg.
DALLAS, TEXAS, M. C. Huie Company, 707 Thomas Building

Federal
NOARK

SIZE 3
MAGNETIC
MOTOR STARTER



For man-size jobs of stop-and-go
Without a bit of care or woe
This starter really fills the bill . . .
A fine example of Federal's skill!

Sets a new standard of ease and speed in replacement of any stationary or moveable contacts. Coil replacement in a few seconds without disturbing line or load connections. Greater compactness, yet more ample wiring space. Silver contacts on all current interrupting points. Exclusive vertical ball-bearing operation for highest speed solenoid action. Overload relays, combination hand or automatic reset, for dependable protection.

FEDERAL ELECTRIC PRODUCTS COMPANY, INC.
EXECUTIVE OFFICES: 50 PARIS ST., NEWARK 5, N. J. PLANTS: HARTFORD, CONN. NEWARK, N. J.

Reddy Kilowatt in action.

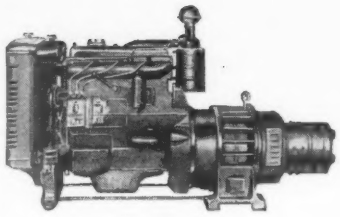
Large exhibitors made up for bulk in the show, but those with less space made an equal contribution, and the list is long. Philco had one of the larger spaces and a similar space was divided between Easy Washer, Gibson, and Zenith. Others were Proctor, Colonial Premier Lamps, Railley Pin-Up Lamps, McCall's Magazine, and Sunbeam (which showed a monster mixer), and Blackstone Washers.

Knapp Monarch, Emerson Fans, Master-Bilt Freezer and Bendix Radio were grouped together as were Deepfreeze, L & H Ranges, Eureka Cleaner, and Majestic. In other pairs were Speed Queen and Kellogg, Stromberg-Carlson and Silent Breeze Fans, and Navis and Smith Lamps with Lear Radio. With Bendix Washer, these took up the more prominent spaces, with smaller booths being sponsored by Emerson Radio, Coolerator, Thor Washer, Home Shop Tools, Hoover Cleaner, Waverly Iron, Chicago Electric, Everhot, Toastmaster, Wilcox-Gay Radio, Cory and American Beauty Iron.

Aside from the usual expectations from such exhibits, the exposition also offered demonstrations and displays of radar, walkie-talkie, wire voice recorder, model homes, simulated television, automatic washers, improved electric dishwashers, garbage disposal units, clothes dryers, precipitron (air filtering), electric blanket, combination dish and clothes washer, latest radios, home freezers, electric ranges, two-temperature refrigerators, circular fluorescent floor and table lamps, sun and heat lamps, fluorescent valance lighting for the house, sterile and germicidal lamps, new-type kitchen units and adequate wiring displays.

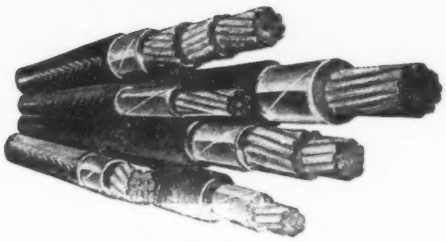
One wing leading off the main arena was occupied entirely by a farm and ranch electrical equipment exhibit, billed as the most complete ever brought together in the Southwest. It was arranged with the assistance of P. T. Montfort, of the Agricultural Engineering Department of Texas A. & M. College, and through the cooperation of leading manufacturers of farm electrical equipment.

Live pigs were even in the pen and their admirers were so numerous that when the pigs were removed for a rest there were inquiries about their welfare. In a mechanical sense, however, the exhibit included displays of farm wiring and electric water systems; several types of milking machines, milk cooler, separator and milk can sterilizer, for poultrymen, a model laying house with equipment installed, including germ-killing lamps and con-



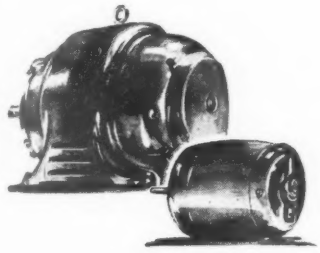
GENERATORS

If unit power generation is your problem, it will pay you to check our large lists of this type of equipment. We have gasoline, steam, Diesel and electric driven generators—(and generators without prime movers) in a wide range of load and voltage characteristics, in both a-c and d-c.



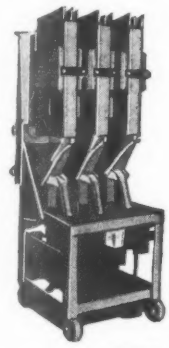
WIRE & CABLE

Our inventory includes an innumerable variety of wire and cable in sizes and insulations usable in industry. Many types conform to underwriters' specifications—others were made for special purposes but are adaptable to industrial and commercial applications.



MOTORS

We have a large supply of electric motors, both a-c and d-c, in unusual speeds, voltages and loads. If you have applications in which these motors can be adapted, inquire at your nearest Regional Office for full particulars and prices.



SWITCH GEAR

Special items in this category are now available if you can use them. Check your requirements and avail yourself of this opportunity to purchase switch gear at considerable savings. Consult your nearest W. A. A. office for description, location and prices.

STANDARD AND SPECIAL ELECTRICAL EQUIPMENT

FOR SALE

priced for immediate disposal

The War Assets Administration offers you government-owned surplus electrical machinery and equipment for your reconversion program at *substantially reduced prices.*

The offer includes wire and cable, generator sets, transformers, switch gear, wiring devices, sub-station power conversion and protective equipment. Much of it is special but adaptable to a large variety of uses.

It has been *priced to sell* and represents attractive bargains to the alert and resourceful industrialist engaging in speedy reconversion.

(Cut out and send to the nearest WAA office listed below)

War Assets Administration: I am interested in the following checked items:

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- ☐ GENERATORS
- ☐ SWITCH GEAR
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- ☐ WIRING DEVICES
- ☐ POWER CONVERSION EQUIPMENT
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- ☐ PROTECTIVE EQUIPMENT

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Firm.....

Address.....

City..... State..... 319-1

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane Cincinnati • Fort Worth (Telephone 3-5381)

VETERANS OF WORLD WAR II: To help you purchase surplus property, a veterans' unit has been established in each WAA office.

trolled lighting for increased egg production, not to mention an automatic electric water warmer and feeder; and the livestock raiser was interested in equipment for feed processing and handling, hammer mills, hatchet mills, electric feed mixer, model electric hay and grain dryers and other equipment to reduce labor on farm or ranch.

It was estimated that to put these exhibits together, pay freight and the salaries of personnel, manufacturers invested $250,000 in the Fort Worth show. Another estimate was that the equipment on hand was worth a minimum of $500,000. These figures do not add up to a million dollar show, but it looked like a million dollars!

It was previously mentioned that the Will Rogers Memorial consisted of two main wings, or units, and in the second of these units was housed the famous General Electric House of Magic. This wing, an excellent auditorium seating 3,500, also served during the exposition as a sounding board for the South Central Forum on adequate wiring.

Estimates are that the House of Magic, with its floating dish, sound-controlled electric train, electric eyes, and other confounding devices made possible by laboratories, played to a minimum of 20,000 during the seven days. Shows were scheduled for 4:00 in the afternoon and 8:30 at night. The night showing was always jammed to capacity and on the final day, it was considered necessary to have three shows to accommodate those interested.

Still another entertainment feature was the Reddy Kilowatt theater, showing "Reddy Made Magic," a cartoon film in technicolor; "The Dawn of Better Living," a Walt Disney technicolor; "Preparing Foods for Freezing," also in technicolor and "Sauce for the Gander," a comedy. Films on short subjects were also shown.

Having started out to do this thing in a big way, TESCO carried through on that basis. The show was advertised on billboards, on the radio, through the newspapers and a special letter went to all post office boxholders within the territory, urban and rural.

A. E. Schwarze, technical adviser to Ebasco Services, came down from New York for duration of the show. W. H. Merrick, Jr., TESCO residential sales manager, was constantly on the job. Paul Harmon, advertising manager, and J. L. Edwards, assistant advertising manager, had their hands full, too.

When the show opened, TESCO was ready with 75,000 Reddy Kilowatt overseas type souvenir paper hats, 60,000 souvenir pencils, 50,000 souvenir programs. The programs even provided extensive memorandum spaces where the housewife, after inspecting the appliances, could make notes on their comparative features.

Then, TESCO opened the show with a flourish. A widely known radio announcer was retained as master of ceremonies. Two girls in patriotic spangles presented the flags of the United States and Texas and a third, similarly attired, sang The Star Spangled Banner.

Thereafter, J. B. Thomas, company president, welcomed the opening-day assemblage. The president of the Chamber of Commerce, the general manager of that organization, and other civic leaders were on hand and a crew of photographers fired their flash bulbs while the mayor of Fort Worth snipped a ribbon, indicating the exposition was officially open.

The show and its purpose were outlined in the souvenir program in this language:

"Sons and daughters of those Texas pioneers who wrested a living from unfriendly forests and raw prairies, or put plow to virgin soil while keeping a sharp vigil for marauding Indians, are on the threshold of a New Frontier—the frontier of electrical living. A potential wealth of material comforts and conveniences are at hand, ready to respond to the pioneering spirit of those who will cast aside old and outworn ways to grasp the opportunities for increased comfort, leisure and happiness that are offered by electrical living.

"Of course, no one person could possibly visit the busy laboratories and experimental departments of the nation's industries, to see what is being developed for the Electric Home of Today . . . and Tomorrow. So Texas Electric Service Company has done the next best thing and brought to you here in Fort Worth an outstanding exhibit of the many exciting new applications of electricity to everyday living . . . and a preview of what you may expect for tomorrow."

Everyone involved is satisfied that the Texas Electric Show of 1946 accomplished that purpose.

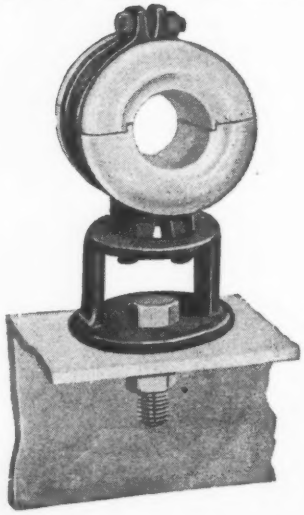
And since this was a special occasion in the cow country, it might be added that Reddy Kilowatt was gaily attired in cowboy boots and a ten-gallon hat.

"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

EFFICIENCY BUSHING SUPPORT

. . . a convenient independent mounting . . . requires only one bolt to be tightened to hold porcelain bushing and clamp to base. Bushings are split-design to reduce power leakage and are completely surrounded by metal. The circular base is adjustable to any angle required for the conductors. EFFICIENCY Bushing Supports are available for Cable diameters from 5/16" to 2-3/8".

Write today for your copy of our Catalog 38B . . . contains complete construction and application data on all EFFICIENCY Devices.



Efficiency ELECTRIC AND MANUFACTURING CO.

MANUFACTURERS OF EFFICIENCY ELECTRICAL DEVICES FOR CONDUIT, WIRE AND CABLE SUSPENSION

EAST PALESTINE, OHIO

The South Central Wiring Forum

(Continued from page 19)

pole ckt. for range or other heavy duty appliances.

"For houses 1500 sq. ft. or more, provide at least 3-15 ampere circuits, 3-20 ampere circuits, and 1-50 amp. double pole ckt.

"3. Wiring—For houses less than 1500 sq. ft. connect 1-20 ampere circuit with No. 12 wire to all appliance outlets in kitchen, breakfast and dining rooms. Leave No. 1-20 amp. ckt. vacant for spare.

"For houses with more than 1500 sq. ft. connect 2-20 ampere circuits with No. 12 wire to appliance outlets in kitchen, breakfast and dining rooms and laundry. Leave 1-20 amp. ckt. vacant for spare.

"In all houses apportion the 15 ampere circuits among the lighting and general convenience outlets then being installed—providing a framework of wiring so that additional switches and receptacles may be installed with maximum ease and economy, at a later time. The 50 ampere double pole circuit may be left vacant if the range or other heavy duty appliance is not to be installed now."

Mr. Walne said his committee had been assured of enough panel boards to meet the requirements of new homes in Dallas and that one builder, now engaged in erecting first 120 and next 240 homes, had been thoroughly converted to the program.

New Orleans Condition Acute

E. N. Avengo, manager of the dealer division, New Orleans Public Service Company, said that the need for promotion of adequate wiring in New Orleans had been acute.

"So we decided," he added, "to use all the means at our disposal and all the people in the industry for the purpose of pointing out the advantages to all involved.

"Our set-up, of course, includes a certificate for every house or builder who meets with the requirements established by the committee. To get the program over to customers, we have used thousands and thousands of pieces of direct mail and have also presented it to large groups gathered in the company auditorium, with an offer of all possible assistance.

"We have found personal contacts with contractors very helpful. We even make layouts for the contractor and send our representatives with the contractor to help him sell adequate wiring. And we have found that an incentive for the development builder—they like that better than speculative builder—is very productive.

"For example, we try to sell the builder on this incentive plan: if he complies with the standards of the committee, we will do a certain amount of advertising in his behalf. In addition, we will place and operate floodlights around a home of his selection, put up posters and lend him the use of our home economics people for demonstrations."

Mr. Avengo told of one development builder who, being sold on adequate wiring, combined the adequate wiring message with his own sales message in a booklet, in which the utility took advertising space. Included in the distribution of this booklet was that to the waiting room of every doctor and dentist in New Orleans.

"Our adequate wiring and appliance story will be told to all who plan to build," Mr. Avengo added, "through the erection of six demonstration homes, strategically located throughout New Orleans and in three price ranges. These demonstration homes will contain adequate wiring in every respect and will also contain everything electrical that makes for better living."

Moderator Rutherford commented: "I draw the conclusion, after hearing Mr. Avengo, that if we are to successfully promote adequate wiring, the utility must do most of the work and carry most of the expense." Mr. Avengo agreed that was largely true.

Question from the floor: "Do architects and consulting engineers like for a utility to make a layout for them?"

Mr. Avengo: "Yes, they like it. In most cases we get excellent cooperation. Even on industrial jobs. But I remember one case where a builder didn't want us to give a layout to a consulting engineers. The builder said the last time we did that the engineer simply took our layout and stamped his own name on it."

Mr. Walne added that his company's experience had been that in residential planning, many architects have insufficient information on adequate wiring and are very gald to have utility help.

Bureau staff members then took their turns at the microphone.

Mr. Northrup discussed organization for adequate wiring promotion through co-operative industry groups and by individual organizations. He reviewed the history of the bureau, pointing out that it was formed in 1897 and that its present program was launched in 1938. He told how the bureau helped communities to get started, described the co-operative effort now in effect with many groups and said the program to get more manufacturers to include AW information in advertising to the industry was meeting with success.

Mr. Biggi detailed the steps necessary in organizing and operating a certification program. He said it was most effective to dramatize the adequate wiring message and "make it a package" so it can be sold in the same sense as a bathroom or a kitchen. He concluded that a certification program is "the one way in which you can actually measure what is being accomplished."

Miss Armin dealt with material and services of the bureau, developed specifically for home town promotion. She displayed samples of this material and explained their adaption to the program. She discussed and showed the various types of consumer promotion material.

Specific Approaches to Markets

The afternoon session was devoted to "Specific Approaches to Adequate Wiring Markets," and presiding, as moderator, was E. L. Kenderdine, chief electrical inspector, Fort Worth.

"I believe that in my position as inspector," Mr. Kenderdine said, "I can be quite helpful to the adequate wiring program, for an inspector is often called upon to act as a consultant. So I am in position to promote the AW program.

"And you can depend on me to do so to the best of my ability, for it is an extreme pleasure for an inspector to know that a job has been adequately wired. I can remember when 660 watts was considered ample capacity.

Mr. Kenderdine first introduced Lawrence Martin, manager of the North Texas Chapter of N.E.C.A., Dallas, who substituted for J. L. McClure, president of the chapter and of the electric firm of that name, also of Dallas.

Mr. Martin referred back to a comment by a speaker in the morning session to the effect that "the contractor is the bottleneck in the adequate wiring program."

"Perhaps," said Mr. Martin, "the contractor is the bottleneck in some cases. At least it must be admitted that the contractor is very close to the customer and in position to exert influence on the customer.

"It must be remembered, however, that a contractor is human and it is human for a contractor, in his eagerness to get jobs, to undersell the cus-

tomer. On the other hand, in our chapter, our members are thoroughly sold on adequate wiring and they work for the program. It seems to me that the individual we must sell is the customer, for he is only a layman and doesn't understand the requirements.

"The National Electrical Contractors Association is one of the five organizations supporting the AW bureau on a national basis, so you can understand that we are fully behind the program. And in our national magazine, Oliver Ohms is to the contractor what Reddy Kilowatt is to the utility.

"Now, I would like to drop one word of caution about residential construction of the present and future. Many of these homes will be GI homes and as we all know the veteran is limited in the cost of his home. So it seems to me that we should guard against inadequate wiring in veteran homes. Wiring is one thing they are almost certain to try to economize on."

Chairman Apperson next came to the microphone to address the forum on "Selling Adequate Wiring in Small Towns."

Declaring that it is as important to promote and sell adequate wiring in small towns as in metropolitan centers if people are to realize and enjoy full benefit from electric service, and if the small town market for appliances is to be converted into sale of those products, he proceeded to underscore small town importance in the adequate wiring campaign.

"The market in small towns, villages and rural areas constitutes a very substantial portion of the unsold total market in this country," the speaker continued. "The fact that the average annual kilowatt hour used per residential customer is generally less in small towns than in cities indicates a proportionately greater opportunity for sales with fewer appliance replacements. This means greater loading of existing wiring facilities and need for increased wire capacity where not already installed.

"Acceptance and use of electric services in small towns has played an important part in their growth and development and has tended to decrease the number of people moving to the cities as the standard of living was raised through modernization and broadening of use of electrical equipment and services. There is much evidence that the tendency toward modern electrical living will be greatly accelerated in the years ahead. People in small towns are going to demand and will buy large quantities of electrical appliances and equipment and will rightfully expect them to perform satisfactorily. That is, they will buy and use the electrical merchandise if wiring adequacy permits or if they can be sold on the idea of paying the cost where extra wiring is necessary. Our experience is that there is widespread lack of realization by people as to the important part that wiring plays in the realization of the benefits of electric service.

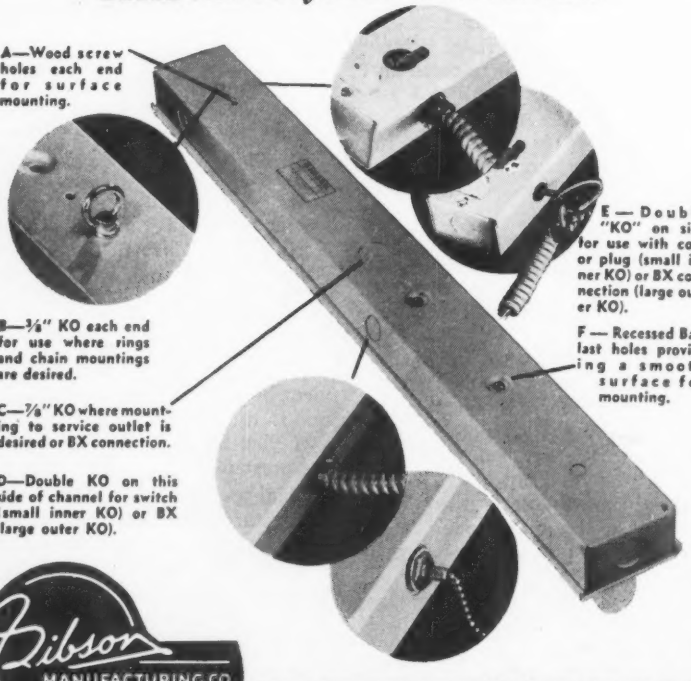
"Unless adequate wiring is sold and installed in the home, whether a new or old one, many major appliances which people want and intend to purchase will not be sold, or if sold may be returned to the dealer because of wiring inadequacy and unwillingness to pay the cost of providing the necessary service. Some purchasers may not even try to return the appliance to the dealer and upon attempting to use it by plugging into an inadequate source become dissatisfied with the results. They then set it aside with much disappointment and very likely will have a poor opinion of the appliance or the utility company's service or both unless there is opportunity to convince the customer that the fault lies in inadequate home wiring.

"Instead of becoming a booster for the appliance the customer quite naturally creates the opposite effect among neighbors and associates. Such instances adversely affect additional appliance sales to that customer and others and definitely increase sales resistance. It is important to note that appliance sales not made because of inadequate wiring definitely result in loss of business to dealers, electrical contractors, and utilities as well as lending agencies who otherwise would have financed many sales. Such happenings, of course, are not peculiar to small towns alone, but are mentioned and emphasized here because of the large number of existing inadequately wired homes in small towns, the large number of homes that will be built and the many dealers, contractors and others who are affected by it.

"The important question is, what should and can be done about it? The first part of the answer is we must realize that it is a sales job of prime importance and magnitude—one that requires the utmost in serious, careful planning and the employment of effective principles of salesmanship. We must also recognize that it is a continuous undertaking and should go on as long as population changes,

GIBSON *Fluorescent* STRIP-LITE

SELLS *because of these* ADDED FEATURES


A—Wood screw holes each end for surface mounting.
B—⅜" KO each end for use where rings and chain mountings are desired.
C—⅞" KO where mounting to service outlet is desired or BX connection.
D—Double KO on this side of channel for switch (small inner KO) or BX (large outer KO).
E — Double "KO" on side for use with cord or plug (small inner KO) or BX connection (large outer KO).
F — Recessed Ballast holes providing a smooth surface for mounting.

Gibson MANUFACTURING CO ATLANTA, GA.

GIBSON MANUFACTURING COMPANY, 132 10th ST. N. E., ATLANTA, GA.

new homes are built, and new electrical things are made. Since every branch of the electrical industry is effected, each manufacturer, distributor, dealer, electrical contractor, and utility should take part and help do the sales job."

Pointing out that in some respects there appears to be a greater need to sell adequate wiring in small towns than in larger cities and towns, Mr. Apperson cited some of the reasons, based on experience and observation, as follows:

1. Municipal regulation of wiring is generally less restrictive and tends toward inadequate installations.

2. In many cases inspection of wiring jobs is a mere formality with the result that some inferior jobs go unchallenged.

3. Low pay for inspectors in small towns makes it less attractive to better qualified people.

4. In many towns, villages and rural areas there are no electrical inspectors. Anybody can do wiring—anything goes—no license is required and apparently many of the people doing wiring never heard of wire larger than number 14.

5. There is less understanding and appreciation of the fundamental difference between code and adequate wiring and many wiremen believe that anything above code is a waste of the customer's money.

6. In small towns there appears to be proportionately more people doing wiring who have little or no conception of the meaning of adequate wiring and its importance. Not being sold themselves, they do not try to sell adequate jobs to their customers. Sometimes they even try to unsell an adequate job recommended by others either because they think it is not needed or wilfully cut both quality and cost in order to get the job.

7. In small towns a rather large portion of homes are built without services of an architect and unless the new owner is sufficiently insistent or the general contractor well enough sold on adequate wiring there is a very good chance that the wiring job is the last thing thought of and will be inadequate for future if not present needs.

8. And finally there is considerable lack of salesmanship employed by persons doing wiring.

Mr. Apperson suggested that small adequate wiring committees be organized in as many small towns as possible and submitted a list of suggestions, described in detail, for proceeding to secure wide public acceptance of adequate wiring in small towns.

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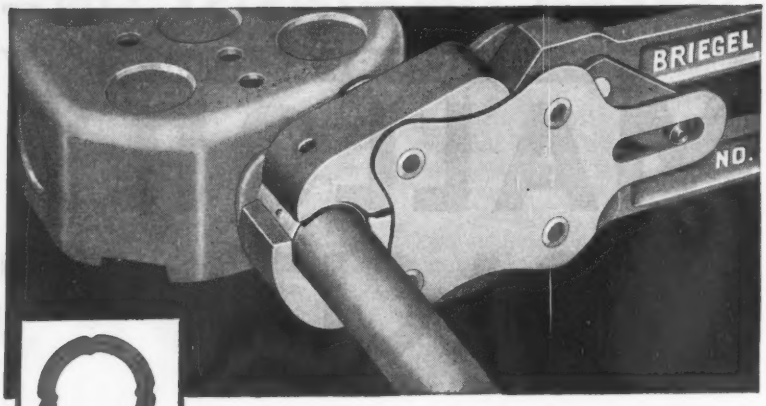

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"In summarizing the problems and methods of selling adequate wiring in small towns," he continued, "my observations are as follows:

"1. There is a vast market for sale of appliances, equipment and services in small towns and the extent that the market is sold will in a large degree depend upon the adequacy of wiring provided.

"2. There appears to be a proportionately greater need for selling adequate wiring because of present inadequacy and other limitations and conditions.

"3. It is an important sales job to be carried out primarily by everyone who sells wiring, electrical merchandise, and kilowatt hours with active support of other related businesses and professions.

"4. And finally there are definite things that can and should be done by all branches of the industry to help make Electrical Living a reality in small towns."

A. P. McNamee, special representative on appliances and radio for McCall's Magazines, told the forum that four women's service magazines, read by 25 millions of women monthly, are a powerful sales promotion force supporting the industry. He added that his publication will give special attention to home modernization for adequate wiring and an effort will be made to convince the housewife she cannot get full benefit of electric appliances without adequate wiring.

Most of the forum discussion was extemporaneous in character, but among the prepared papers, that by J. E. Burton, of Burton Brothers Electric Company, Fort Worth contractors, was considered outstanding and brought Mr. Burton many commendatory expressions.

His subject was, "Team Work in Industry Needed to Get the Job Done," and he identified the industry as a team, its members consisting of utilities, contractors, wholesalers, and manufacturers. He declared that the "boss" of this team is the consumer and that the task of making his life much fuller by the wise and intelligent use of electricity demands complete attention of all members of the team.

The forum closed after discussions by Miss Armin, Mr. Biggi, and Mr. Northrup on "Methods of developing markets through national magazines, education groups, industry employees, architects, builders, home financing agencies, agricultural agencies and home modernization prospects, and specified materials available for reaching these groups."

Power Possibilities From Atomic Energy

(Continued from page 15)

ing units that have been constructed until now the energy is produced at a very low temperature. This undoubtedly is due to a great extent to the fact that the primary purpose for which the piles have been constructed during the war was not production of useful power but the production of plutonium. For this reason no effort was made in the direction of constructing a pile with materials capable of standing a very high temperature since such development undoubtedly would have retarded very considerably the achievement of the essential objectives.

No Temperature Limits

The following points are important. There is no known practical limitation to the temperature at which energy can be produced by a fission chain reaction. Indeed, there is reason to believe that in the explosion of the atomic bombs temperatures perhaps as high as 1,000,000° C. may have been obtained. Only for machines designed to operate at a steady level a practical limitation is imposed by the refractory properties of the materials used. In this respect, the choice of the materials is quite critical because not only their ability to stand high temperatures must be taken into account but also one must consider the adverse effect that adding foreign materials in the reaction system has on the nuclear reaction itself. This adverse effect is due to the fact that most materials absorb neutrons sometimes more and sometimes less. Any material that has to be added as a coolant to remove heat from the pile or as a lining for the pipes through which a cooling fluid is conducted determines a loss of neutrons. When this loss is so large that the reproduction factor drops below 1 the reaction stops.

Large Amounts of Energy

It has been mentioned that the essential fuel in piles of the Hanford type is U^{235} which represents only .7 percent of the total weight of natural uranium.

The content in fission energy of uranium is roughly 3,000,000 times that of an equal weight of coal. If only .7 percent of the uranium is utilized, the practical uranium to coal ratio will be about 20,000. These figures point to the great importance of devising methods for the complete utilization of the energy of uranium.

The demand for a practical solution of this problem may not be very press-

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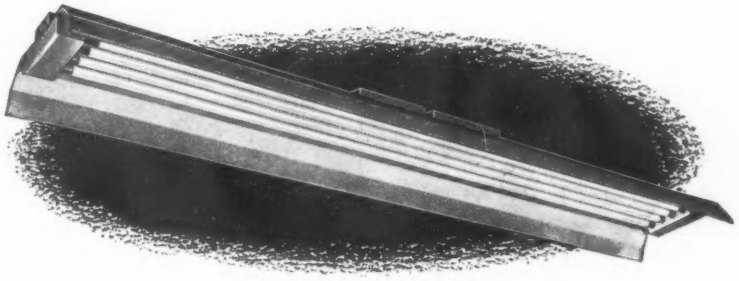

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ing in the immediate future since there still are fairly large uranium deposits which can be mined at relatively low cost. If we conceive, however, a development in which large amounts of atomic energy would be produced by U^{235}, the rich deposits of uranium would rapidly be exhausted and further production would have to use very poor ores with a consequent increase of several orders of magnitude in the cost of the primary material. In this case, the importance of a complete utilization of the energy stored in uranium would naturally become much greater. It is clear on the other hand the energy value of one pound of uranium is so great that even an enormous increase of cost of this material may not interfere with its economical use as a source of power. Indeed, 3 million tons of coal, equivalent in energy content to one ton of uranium, cost about 8 million dollars. Consequently, as far as cost of the raw materials, uranium and coal would become equivalent for a price of 4,000 dollars per pound. Before the war the cost of uranium was about 2 dollars per pound, so that an increase of the order of a thousand times the pre-war price would not be necessarily uneconomical.

We might conceive that 20 or 30 years from now the general scheme of atomic energy production may be perhaps about as follows: There will be large central installations in which very great amounts of power will be produced and transformed into electrical energy or steam for local power consumption. Besides producing directly power, these large units may also produce some amount of plutonium which will be extracted and distributed to small installations in which plutonium and not uranium will be used as the primary fuel. This plan would have the advantage of permitting wide use of relatively small power units thereby reducing very greatly the difficulties of distribution.

A general scheme of this type has recently been discussed in a report by the State Department outlining a possible organization for the international control of atomic energy. According to this report the large central units in which plutonium is produced, as well as all sources of uranium and thorium, would be controlled and operated by an international organization which would distribute or sell plutonium in a denatured form for use by individual consumers. The authors of this report express the view that it may be possible to denature plutonium so as to make its use for military uses exceedingly difficult and time consuming and express the hope therefore that it may be feasible to exert only a minimum international control on the users of denatured plutonium without danger that it may be diverted secretly to construction of weapons. Such a scheme undoubtedly has some attractive features although the report may be over-optimistic in its estimate of the difficulties to divert denatured plutonium to military uses. There is no denying the fact that the possible use of plutonium for aggressive warfare constitutes a difficulty for the industrial uses of atomic energy that is much greater than any technical difficulty that we can foresee. The problem of preventing this use is essentially political and not technical and I do not see much hope of solving it unless the very basis of the relationships among nations should be thoroughly changed in the future years.

Necessity of Shields

Going back to the technical problems, I would like to mention one more factor of atomic energy units which will prove a serious limitation to their general use. During the process of fission, which is basic to the production of atomic energy, not only energy but also radiations of various kinds, particularly neutrons and gamma rays, are produced. Unless they are prevented from doing so by a shield, these radiations would escape from the pile and their intensity would be so terrific that they would kill in a very short time any living being who were to approach an unshielded operating unit. It is therefore an essential necessity to shield the pile with such materials as to prevent the escape of lethal radiation. In principle, the problem is not at all difficult to solve. It is sufficient, for example, to surround the pile with a concrete wall of several feet thickness in order to eliminate completely any danger. On the other hand, there is no way to eliminate the radiations without the use of a very heavy shield. Indeed, in many designs of piles that have been discussed the shield represents by far the greatest part of the weight of the installation. The necessity of surrounding the pile with a heavy shield will prevent several uses of atomic power. It does not appear possible for instance to design an atomic power unit light enough to be used in a car or in a plane of ordinary size Perhaps a large locomotive may be the smallest mobile unit in which an atomic power plant conceivably could be installed.

We may summarize this discussion

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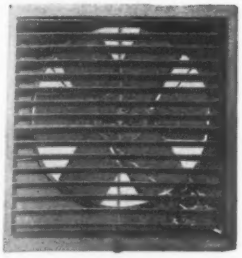

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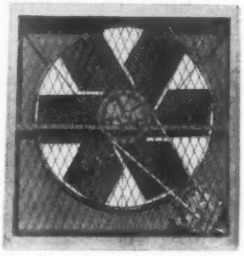

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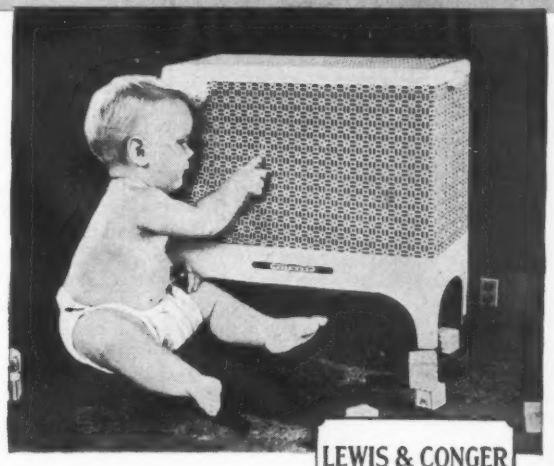

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by stating that there is definitely a technical possibility that atomic power may gradually develop into one of the principal sources of useful power. If this expectation will prove correct, great advantages can be expected to come from the fact that the weight of the fuel is almost negligible. This feature may be particularly valuable for making power available to regions of difficult access and far from deposits of coal. It also may prove a great asset in mobile power units, for example, in a power plant for ship propulsion. On the disadvantage side we have some technical limitations to the applicability of atomic power of which perhaps the most serious is the impossibility of constructing light power units; also there will be some peculiar difficulties in operating atomic plants, as for example the necessity of handling highly radio-active substances which will necessitate, at least for some considerable period, the use of specially skilled personnel for the operation. But the chief obstacle in the way of developing atomic power will be the difficulty of organizing a large scale industrial development in an internationally safe way. This presents actually problems much more difficult to solve than any of the technical developments that are necessary. It will require an unusual amount of statesmanship to balance properly the necessity of allaying the international suspicion that arises from withholding technical secrets, against the obvious danger of dumping the details of the procedures for an extremely dangerous new method of warfare on a world that may not yet be prepared to renounce war. Furthermore, the proper balance should be found in the relatively short time that will elapse before the "secrets" will naturally become open knowledge by rediscovery on part of the scientists and engineers of other countries.

One might be led to question whether the scientists acted wisely in presenting the statesmen of the world with this appalling new problem. Actually, there was no choice. Once basic knowledge is acquired any attempt at preventing its fruition would be as futile as hoping to stop the earth from revolving around the sun by decree.

Applications of Atomic Power

Power production is not the only peaceful use of atomic chain reactions that is in sight. There are other possibilities which may perhaps not compete with the power production in direct economic importance, but perhaps may prove to be ultimately the most fruitful field of development. An operating pile is a source of radioactive materials many orders of magnitude stronger than any source previously obtained. Radioactive materials are produced partly as a direct consequence of the fission process since the fragments into which the uranium atoms split are radioactive isotopes of elements located in the middle part of the periodic system. These radioactive elements can be purified chemically. Other radioactive substances can be produced as follows. In a going pile neutrons are emitted continuously in very great numbers. Any substance that is inserted in the pile is exposed to an intensive bombardment by these neutrons. When a neutron strikes the nucleus of a substance, several reactions may take place which, in many cases, give rise to the formation of radioactive isotopes. Most elements can be obtained in this way in a radioactive form. The lifetimes of these elements range from a fraction of a second to thousands of years. Among the more significant artificial radio-elements one should mention Carbon 14 with a lifetime of about three thousand years. Radioactive substances can be used for a variety

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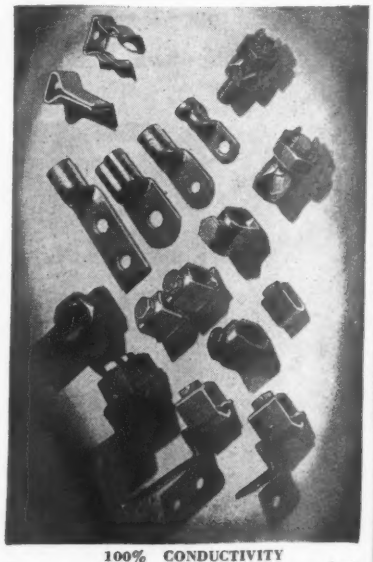

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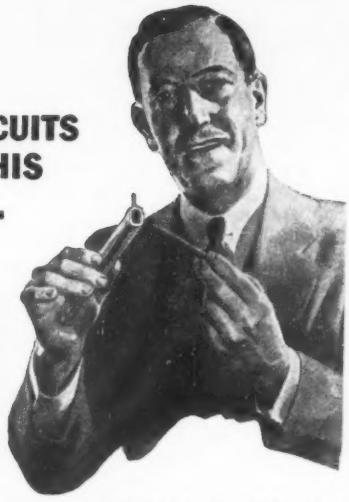

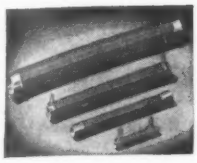

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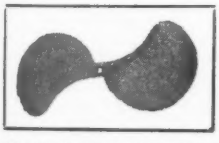

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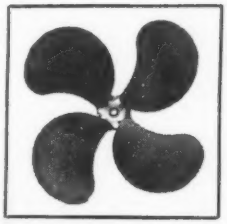

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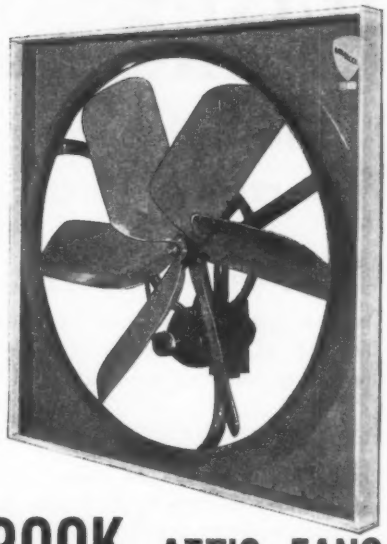

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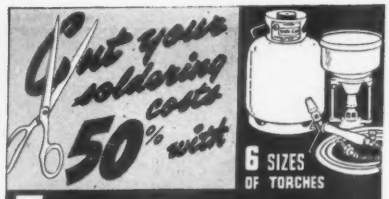

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of purposes. The radiations emitted by them are equivalent to the radiations emitted by radium and could be used for medical purposes on a much greater scale than has been possible with radium. Also from the point of view of radiotherapy, the hope has been expressed that it might be possible to take advantage of the fact that the artificial radioactive substances form a variety of chemical elements and one might use the chemical properties in order to achieve a concentration of the active material in the tissue that is to be exposed to the radiations.

Very great hopes have been raised by the possibility of using large amounts of radioactive materials as tracers. Particularly attractive in this respect appears the possibility to use Carbon 14 as a tracer for carbon in organic chemical and bio-chemical work. The use of Carbon 14 in biology is expected to offer means to follow easily the reaction of carbon in the complicated chemical processes of life and it is hoped that the availability of Carbon 14 will be adequate to allow research in this direction to proceed on a very large scale.

It would not be very surprising if the stimulus that these new techniques will give to science were to have an outcome more spectacular than an economic and convenient energy source or the fearful destructiveness of the atomic bomb.

Reverse Cycle Heating Has Promising Future

(Continued from page 16)

place to discard heat on the cooling cycle. This one factor has probably been equally as difficult in the development of the heat pump as has the development of the mechanical equipment and heat exchanger elements necessary to make a satisfactorily balanced unit.

One of the units at present on the market is manufactured by the Dryer-Hanson Company, of Los Angeles. This unit utilizes the outside air as a source of heat and as the medium for dissipating the heat on the cooling cycle. This type of unit has certain limitations with regard to areas in which it can be applied. Certainly, when very low temperatures are encountered, such as in the northern part of the country, the efficiency of the unit will be sufficiently low to make it impractical to use. However, in a considerable portion of the seaboard area of this country and in the South, this unit has potentialities. The large volume of air to be passed into and out of a home presents some problems.

The other unit on the market at the present time is manufactured by the Muncie Gear Works, of Muncie, Indiana. It uses water or the earth as a source of heat. The disadvantage of this type of unit is that it requires a water well in order to obtain an economical water source. Its advantage is that the earth temperature, remaining essentially constant, gives uniform operating conditions and greatly simplifies the equipment necessary in the construction of the unit. Because of the fact that the water temperature available is considerably higher than the minimum air temperatures in all parts of the country, this unit has a high efficiency under maximum load requirements. There are undoubtedly many places where units of both types will find advantageous application and many places where each type may not be applicable. In general, however, it appears that the heat pump should be able to satisfy the general heating requirements of most of this country.

As a heating system, the utilization of the heat pump or reverse cycle heating represents a very high type of equipment, since it gives automatic

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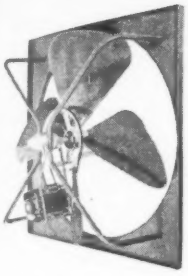

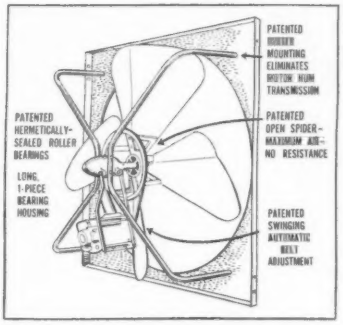
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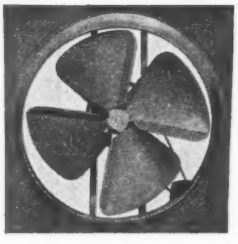

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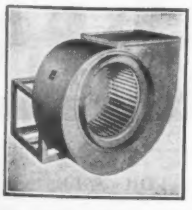

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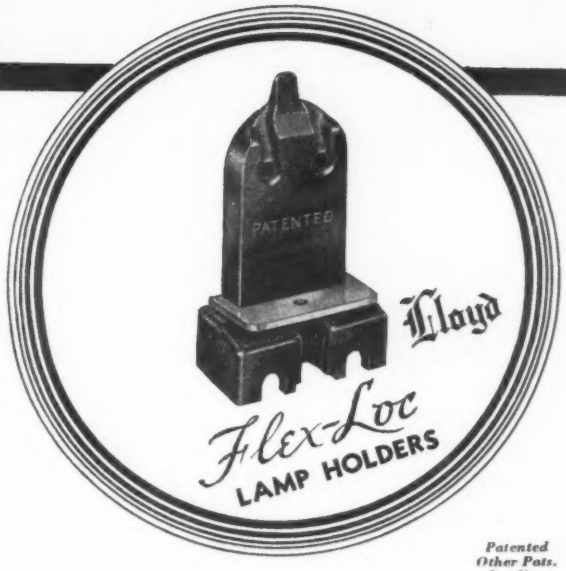

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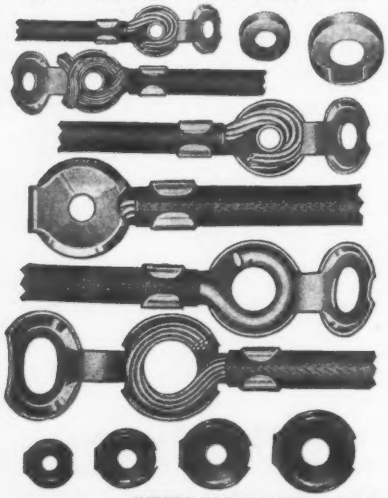

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operation, the maximum cleanliness, compactness and flexibility, and requires the minimum installation cost. Heating systems utilizing coal, oil and gas introduce many problems including hazards of explosions, fire and of course introduce the many problems which are involved with soot, dirt, smoke, and odors.

For heating of rural homes, reverse cycle heating opens up a field of automatic heating which has little competition from the other sources of automatic heat. From the standpoint of sales and customer acceptance, the fact that the heat pump is nothing more than a large edition of the household refrigerator should make it very easy to get customer acceptance. Their experience with the automatic household refrigeration unit has proved to them the merits of this type of equipment, and, inasmuch as the heat pump is basically only a larger edition of the household refrigerator, the sales resistance from an equipment standpoint should be very low.

The major portion of heat pump installations at the present time are in commercial applications. A survey of these installations will be particularly helpful in giving information which can be applied to make a prediction of the future of the heat pump. While the major emphasis on the heat pump development at the present time is for home heating, its potentialities with regard to small office buildings, etc., should also be considered, particularly in view of the fact that there is a trend toward summer cooling in many areas. This summer cooling imposes a load on the utilities which can only be balanced by equivalent winter heating loads with the same equipment.

Before the heat pump development is completed, extensive study of these units in actual homes will be necessary in order to appraise its suitability as a home unit and also to determine what the minimum requirement of the average home would be with respect to automatic control and with respect to the degree of cooling required. While there is considerable experience with summer cooling in office buildings, restaurants, etc., it has been applied to such a limited extent in the home that it is difficult to determine what the minimum requirements would be and what peculiar conditions would have to be met in order to give satisfactory service. This can only be done by a study of actual heat pump installations in houses under various climatic conditions.

Once all of these factors have been studied and some idea as to the trend in the heat pump development determined, the utilities will be in a position to determine how they can best help promote the development of the heat pump and to adapt it to their local conditions. As a part of this general program it is expected that a considerable amount of time will be devoted to presenting to the public and others concerned, information as to the present status of the heat pump, as well as its future possibilities. A great deal of information along these lines properly disseminated can do much to eliminate the difficulties which arise from improperly handling new equipment of this type. The present trend toward the heat pump demands careful handling in order to promote orderly development and proper application. The action of the Southeastern Electric Exchange in setting up a unified action is certainly a step in the right direction.

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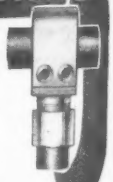

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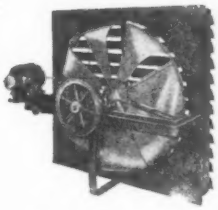

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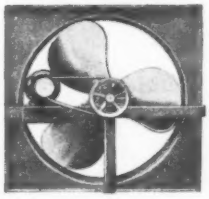

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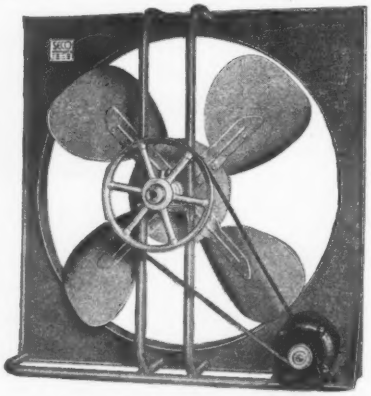

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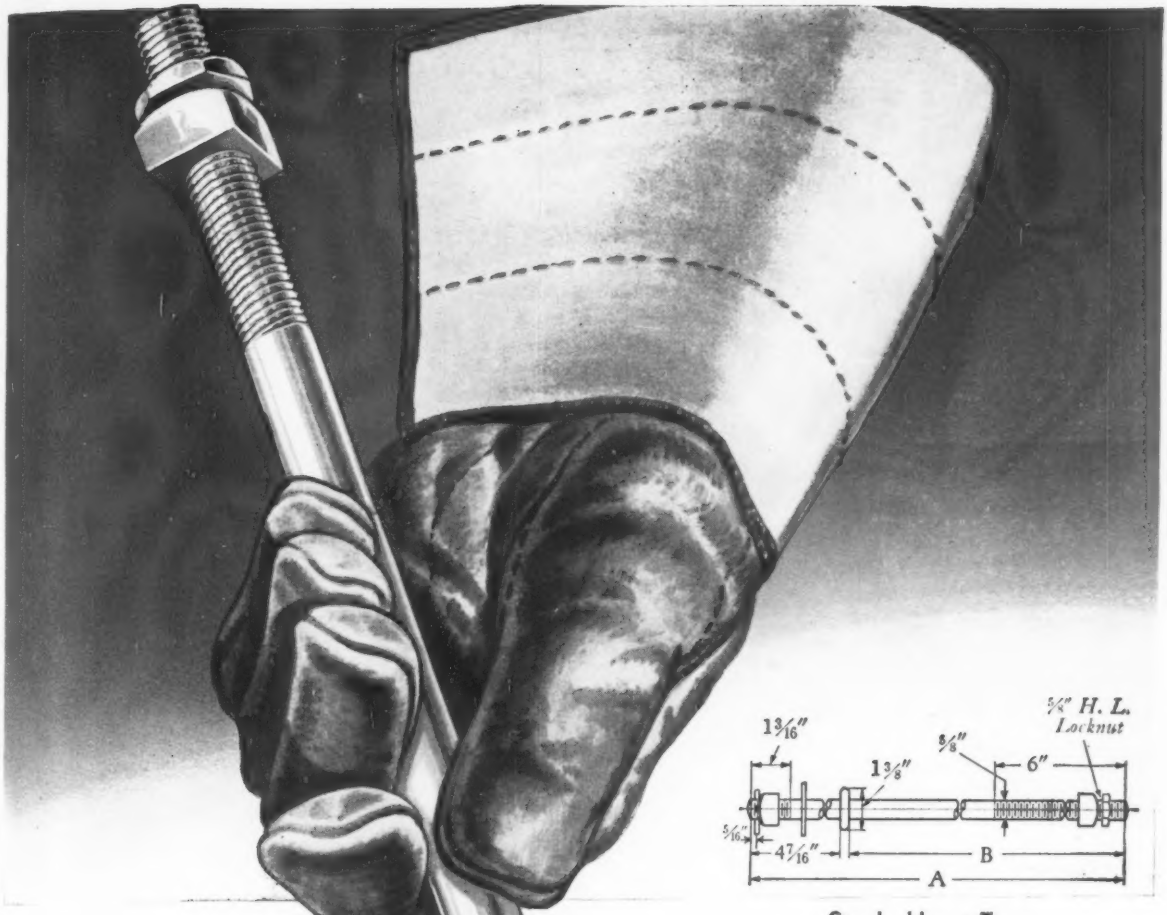

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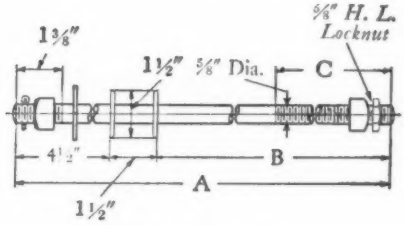

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8742	14¾	10	⅝	455 or 355	197

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8828	15	9	5½	⅝	455 or 355	196
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